W3000

TECHNICAL MANUAL

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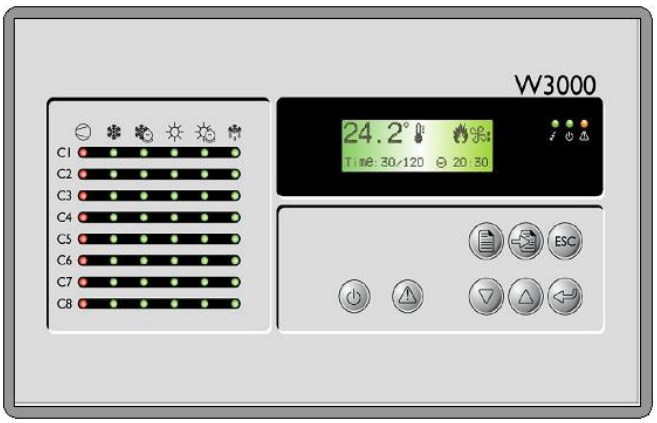
Notice: *The W3000 controller software is protected by a digital signature.*
This means that it can only work on boards supplied by Climaveneta and not on boards purchased from other dealers.

1 USER INTERFACE

There are three types of user interface:

W3000



W3000 compact

W3000 base

Depending on the type of user interface installed, there are more or less keys available for controlling the unit and for accessing system information.

Key		Description
W3000, W3000 base	**W3000 compact**	
	Prg	[MENU key]: accesses the main menu.
		[UP key]: moves around the masks and sets control parameter values
		[DOWN key]: moves around the masks and sets control parameter values
		[ENTER key]: confirms entered data.
ESC	Esc	[ESC key]: goes back one level in the mask tree if you are in the header masks, or returns to the unit controller.
		[ALARM key]: displays the alarms and resets normal operating conditions.
	---	[SETPOINT key]: directly accesses the setpoint menu.
	---	[ON/OFF key]: switches the machine on and off.

For each compressor, the following LED's are also located on the W3000 user interface:

Symbol	Colour	Description
	Green	If the LED shines steady the compressor is on, if it flashes the compressor is demanded
	Red	The compressor is blocked by a compressor or circuit alarm
	Green	The compressor is in the "chiller" mode
	Green	The circuit is in the "freecooling" mode
	Green	The compressor is in the "heat pump" mode
	Green	If the LED shines steady the circuit is in the "recovery mode", if it flashes there is a "recovery alarm"
	Green	If the LED shines steady the circuit is in the "defrost mode", if it flashes it is in the "drip mode"

1.1 Menu structure

The tree structures for moving around the various menus are shown below.

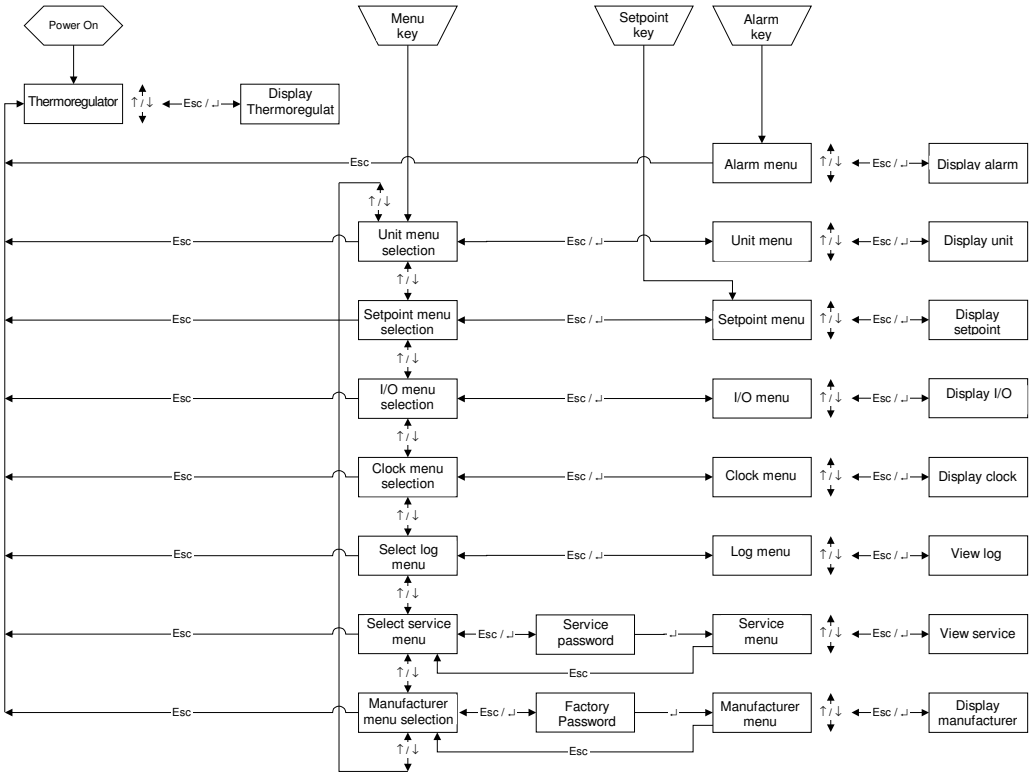


Figure 1.1: *menu tree for W3000-W3000 compact*

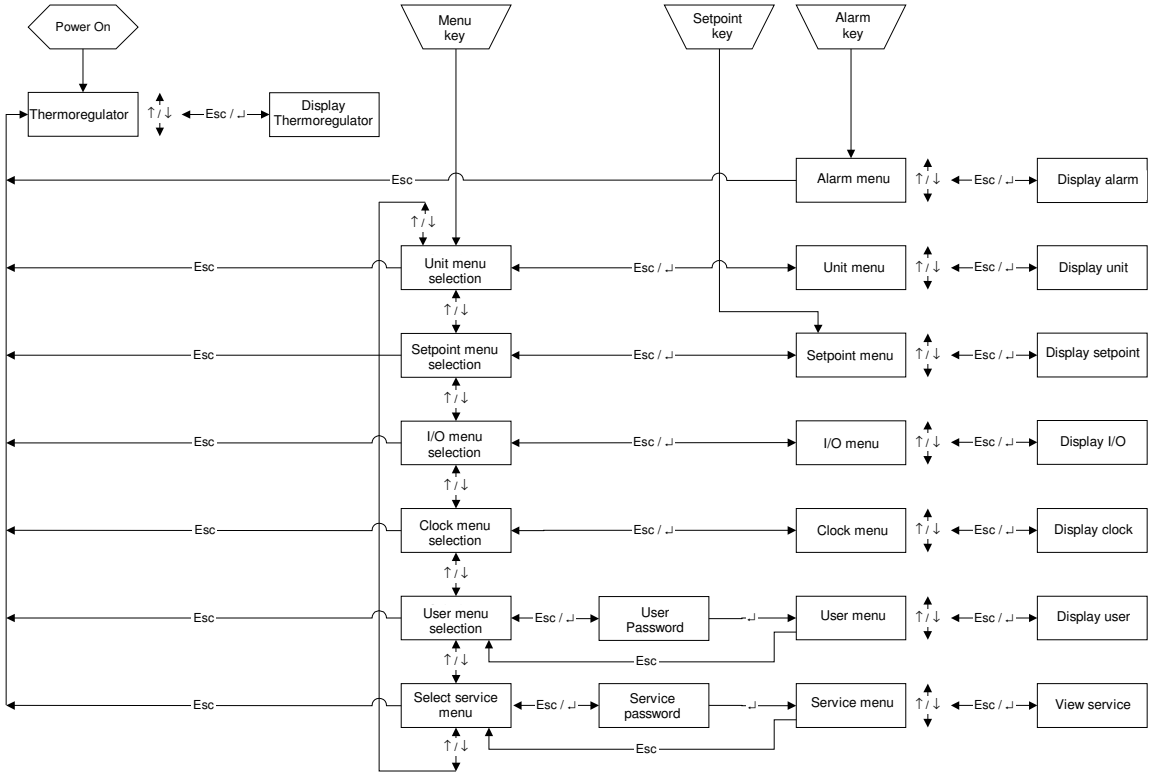


Figure 1.2: *menu tree for W3000 base*

The menus are briefly described below:

- The "Unit Menu" displays information such as temperature, pressure and circuit states.
- The "Setpoint menu" is used to set the setpoints for the various available functions. Different setpoints can be set depending on the available operating modes (chiller, heat pump and recovery). Dual setpoint values can also be set for chiller and heat pump operation (only if the digital input is fitted and the "dual setpoint" function is enabled in the "user menu").
- The "I/O menu" shows the status of the digital inputs and values read from the analogue inputs. It also shows the status of the digital outputs and the voltage supplied to the analogue outputs. If expansions are necessary (depending on the configuration parameters), the inputs and outputs of the latter are also shown.
- Parameters relative to user programming of the unit can be displayed and set in the "User menu".
- Unit configuration parameters can be displayed and set in the "manufacturer menu".
- Service engineers can view and set parameters in the "Assistance menu".
- The list of alarm events recorded by the unit can be displayed in the "Log menu" (only accessible if the clock card is installed).
- The "Clock menu", if the clock board is present, is used to set and display the date and time and configure the time bands (except for W3000 base).

  After enabling time bands from the "enable time bands" parameter in the "user menu", time bands can be set and specific operating modes and different setpoints can be set according to requirements.
  Several time bands (up to 10) of different types (A, B, C and D) can be set during the day.
  Figure 1.3 shows an example: the beginning of the first time band is set at 00:00 and the end of the tenth time band is set at 23:59; the end of one time band determines the beginning of the following one.
  To use a smaller number of bands, set the time a band ends to the same time it begins, and that band will be ignored. Summer and winter setpoints and unit On/Off switching can be set for each time band. If the unit is switched Off, it will remain in the "Off from time bands" mode.

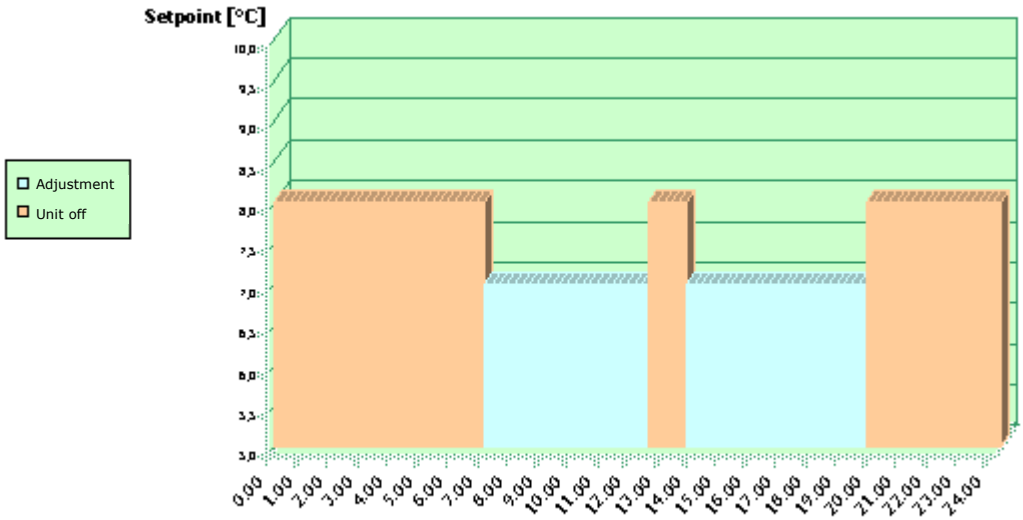


Figure 1.3: *example of setting time bands*

1.2 Switching the unit on and off

Caution: connect the unit to the power supply at least 8 hours before starting it; if this is not done, the guarantee will become null and void.

There are different procedures for starting or stopping the unit: using the user interface keys or selecting from the display. The following procedures have a priority. In the event of conflicts between different settings, the following priorities apply:

- highest priority:	on/off from keypad - on/off from parameter
	on/off from digital input
	on/off from time bands
- lowest priority:	on/off from protocol

using the [ON/OFF] key:

For W3000 and W3000 base

Proceed as follows:
- *SWITCHING ON:* press the [ON-OFF] key.
- *SWITCHING OFF:* press the [ON-OFF] key.

In the W3000, the message Com. : ON appears on the display
In the W3000 base, the message "On" appears on the display with the LED on, or "OFF" with the LED off.

using the On/Off parameter:

For W3000 and W3000 compact

The "Com: On/Off" parameter can be displayed on the user interface. "Off" means that the unit is switched off while "On" means that the unit is switched on.
Proceed as follows:
- *SWITCHING ON:* Move to the "On/Off" parameter by pressing [Enter] and then press [Up] or [Down] until "On" appears. Press [Enter] again to confirm. If "On" continues to be displayed it means that the unit has been switched on.
- *SWITCHING OFF:* Move to the "On/Off" parameter and change to "Off" using the same procedure used to switch the unit on. Press [Enter] again to confirm. If "Off" continues to be displayed it means that the unit has been switched on.

using the digital input:

Only if the digital input is fitted.

Open the "user menu" and check that the "On/Off enable from digital input" parameter is set to "Yes".
When the contact is open the unit is "Off", when the contact is closed the unit is "On".
Proceed as follows:
- *SWITCHING ON*: Close the remote On/Off contact. The "On from digital input" message appears in the main mask to show that the unit has been switched on.
- *SWITCHING OFF*: Open the remote On/Off contact. The "Off from digital input" message appears in the main mask to show that the unit has been switched off.

In the W3000 base the following procedure is used: press [MENU] / select the "User" menu using the [UP] or [DOWN] keys / press [ENTER] to access the menu / press enter to type in the password / press [UP] or [DOWN] to choose the password and [ENTER] to confirm / use the [UP] or [DOWN] keys to choose the "dI 0" (Enable from digital input) mask / press [ENTER] to view the current setting of the parameter ("Y" or "N") / press [ENTER] to modify the parameter (the display flashes) / press [UP] or [DOWN] to select one of the two alternatives.
Press the "digital input" button on the panel to switch the unit on and off.

using time bands:

For W3000 and W3000 compact (if the clock board is fitted)

Make sure that the "Clock board not installed" is not displayed in the "clock menu".
Check that the "Time bands enabled" parameter in the "user menu" is set to "Yes".

- *SWITCHING ON*: set the required switching on time in the "clock menu". The unit switches on when the set time is reached. The "On from time bands" message appears in the main mask to show that the unit has been switched on. N.B.: The unit does not switch on if it is set to "Off from keypad" or "Off from digital input".
  SWITCHING OFF: set the required switching off time in the "clock menu". The unit switches off when the set time is reached. The "Off from time bands" message appears in the main mask to show that the unit has been switched off.

using the supervision protocol:

Only if the serial board is fitted.

Check that the "Supervisor enable" and "On/Off enable from supervisor" parameters in the "user menu" are set to "Yes".
Proceed as follows:

- *SWITCHING ON*: Send the switching on command from the protocol. The "On from supervisor" message appears in the main mask to show that the unit has been switched on. N.B.: The unit does not switch on if it is set to "Off from keypad" or "Off from digital input".
- *SWITCHING OFF:* Send the switching off command from the protocol. The "Off from supervisor" message appears in the main mask to show that the unit has been switched off.

In the W3000 base the following procedure is used: press [MENU] / select the User menu using the [UP] or [DOWN] keys / press [ENTER] to access the menu / press enter to type in the password / press [UP] or [DOWN] to choose the password and [ENTER] to confirm / use the [UP] or [DOWN] keys to choose the "SPr" (Enable from supervisor) mask / press [ENTER] to view the current setting / press [ENTER] to see the display flashing / press [UP] or [DOWN] to modify the setting and press [ENTER] to confirm.

1.3 Setting the operating mode

Caution: Do not switch from chiller to heat pump unless the inlet temperature is above 15°C. Do not switch from heat pump to chiller unless the inlet water temperature is below 30°C.

There are various ways of setting the operating mode of the unit.
The set operating mode may be any one of the following, as long as they are compatible with the unit:

Operating mode		**Description**
	W3000 base	
chiller	ch	Chiller
chiller+rec		Chiller plus recovery
heatpump	hp	Heat pump
summer ch		Chiller in summer mode
summer ch+rec		Chiller plus recovery in summer mode
summer rec		Recovery in summer mode
recovery		Recovery only
summer auto		Automatic in summer mode
winter hp		Heat pump in winter mode
winter rec		Recovery in winter mode
winter auto		Automatic in winter mode
auto		Automatic

The following procedures have a priority: in the event of conflicts between opposing settings the following priorities apply:

- highest priority: change through parameter
  chiller/heat pump from digital input
  ch/ch+rec from digital input
- lowest priority: change through protocol

Using the parameter:

Make sure the unit is "Off". Access the "setpoint menu" and display the "Operating mode" parameter. Move to the "Operating mode" parameter by pressing [Enter] and modify the parameter by pressing [Up] or [Down]. Press [Enter] again to confirm. If the set message continues to be displayed it means that operating mode has been changed.

In the W3000 base the key sequence is: switch off the unit using the [ON/OFF] key / press the [setpoint] key / select MODE with the [UP] or [DOWN] keys / press [Enter] / press [Enter]. At this point the cursor flashes. Press the [UP] or [DOWN] keys to select either "ch"= chiller or "hp"= heat pump. Press [Enter] to confirm.

Using the digital input:

Only for heat pump units and only if the digital input is present.

Check that the "Chiller/Hp enable from digital input" parameter in the "user menu" is set to "Yes".
When the contact is open the unit is in the "heat pump" mode, when the contact is closed the unit is in the "chiller" mode. Switching the digital input switches the unit off, changes the operating mode and switches the unit on again.
In the W3000 base access the "user menu" / select "DI S" by pressing the [UP or DOWN] key/ press [Enter] to view the current setting / press [Enter] to see the current setting flashing and change it using the [UP or DOWN] key / press [Enter] to confirm the new setting.

Using the recovery from digital input command:

Only for "chiller plus recovery" units and only if the digital input is present. This mode is not present in the W3000 base.

Proceed as follows: check that the "Recovery control enable from digital input" parameter in the "Recovery menu" is set to "Yes".
When the contact is open the unit is in the "chiller+rec" mode, when the contact is closed the unit is in the "chiller" mode. Switching the digital input switches the unit off, changes the operating mode and switches the unit on again.

Using the supervision protocol:

Only applicable if the serial board is fitted.
Check that the "Supervisor enable" and "Enable operating mode from supervisor" parameters in the "user menu" are set to "Yes".
Make sure the unit is "Off". Send the change operating mode command from the protocol. The operating mode only changes if the unit is switched off.
In the W3000 base press [ON/OFF] to switch the unit off. Access the "user menu" / press [UP] or [DOWN] to select "SV M"/ press [Enter] to view the set mode / press [Enter] to see the setting flashing / press [UP] or [DOWN] to modify the setting / press [Enter] to confirm the new setting.
Send the change operating mode command from the protocol. The operating mode only changes if the unit is switched off.

1.4 Setting adjustment methods

Depending on the type of compressor used, various adjustment methods may be selected.

Compressor	Unit	Adjustment method
Hermetic	Water/water heat pump Water/water chiller Evaporating units Water/air heat pump Water/air chiller Chiller with heat recovery	• *Quick Mind on outlet probe* • *Quick Mind on inlet probe* • *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
	Chiller with free-cooling Energy Raiser Heat pump with heat recovery	• *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
Alternative	Chiller with free-cooling Energy Raiser Heat pump with recovery Chiller with heat recovery Water/water heat pump Water/water chiller Evaporating units Water/air heat pump Water/air chiller	• *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
Screw	Water/water heat pump Water/water chiller Evaporating units Water/air heat pump Water/air chiller Chiller with heat recovery Chiller with freecooling	• *Modulating on outlet probe* • *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
	Energy Raiser Heat pump with recovery	• *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
Centrifuge	Water/water chiller Water/air chiller	• *Proportional on inlet probe + integral on outlet probe*

Table 1.1: *adjustment methods available by compressor type*

The various adjustment methods are described below.

1.4.1 Proportional step adjustment on inlet probe

Some examples of proportional "step" adjustment on the inlet temperature probe:

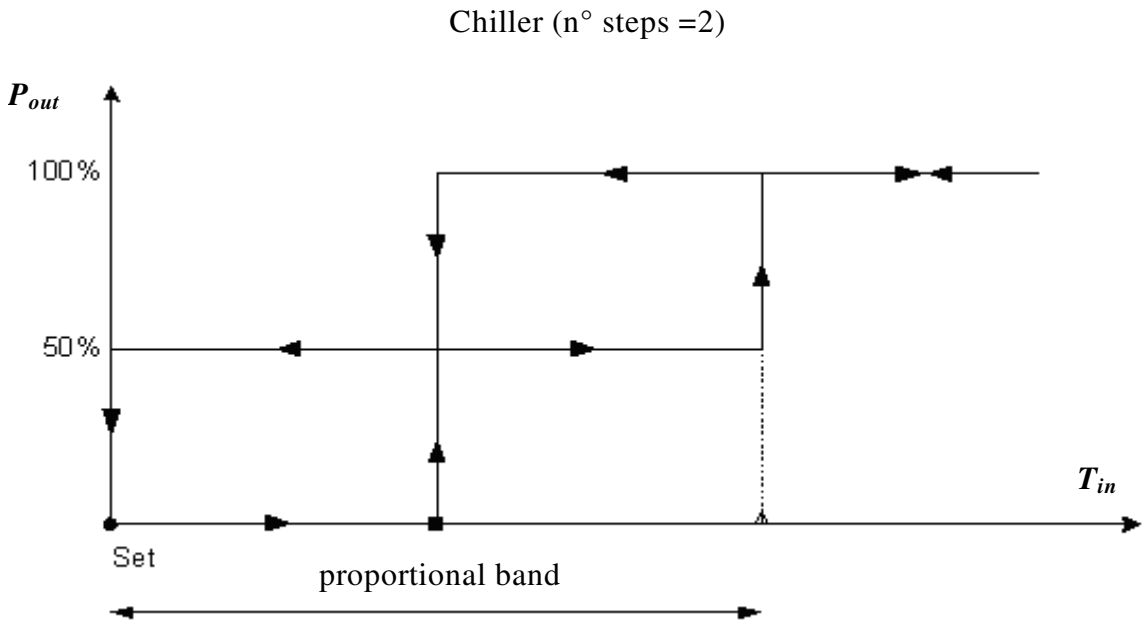


Figure 1.4: *T_{in} is the inlet variable, P_{out} is the percentage of delivered power (chiller).*
■ *= Set + proportional band/2*

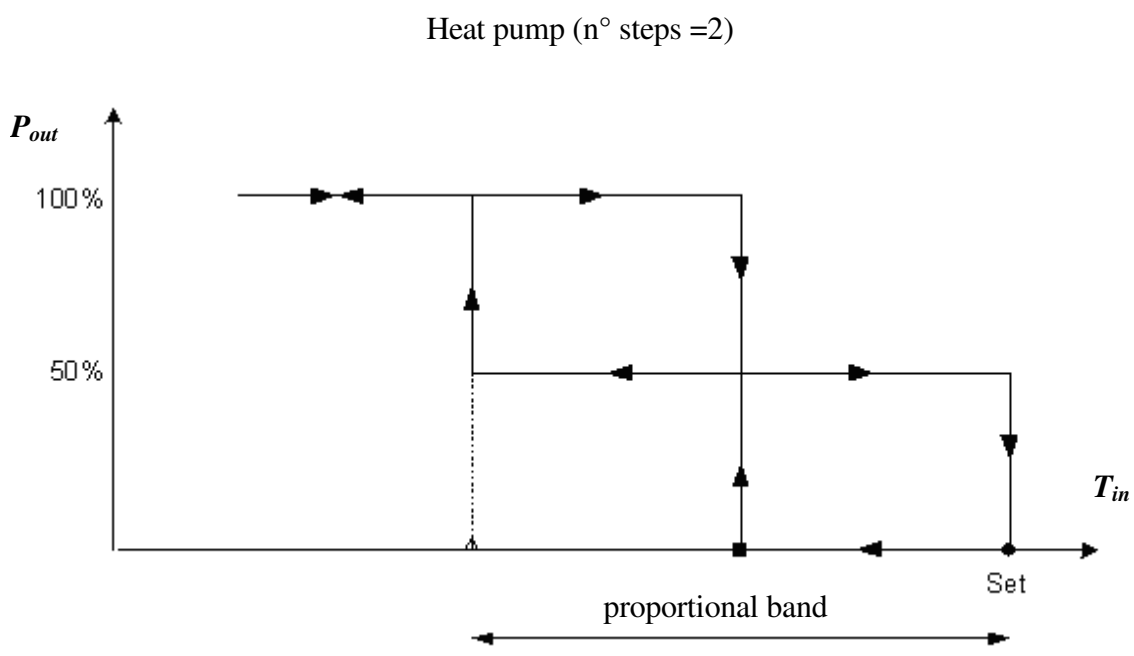


Figure 1.5: *T_{in} is the inlet variable, P_{out} is the percentage of delivered power (heat pump).*
■ *= Set + proportional band/2*

The following *tables* show some typical values for the parameters in question. The theoretical maximum and minimum outlet temperature values refer to operation at nominal flow rates (with a thermal head at the evaporator of 5 °C and sufficient water in the system to ensure a litre / KW ratio equal to or greater than 7).

N° steps	Setpoint (°C)	Proportional band (°C)	Theoric min. outlet T (°C)	Theoric max. outlet T (°C)
2	9.5	2.5	5.7	10.8
4	7	5	5.7	8.3

Table 1.2: *normal setpoint and proportional band values according to the number of steps (chiller).*

N° steps	Setpoint (°C)	Proportional band (°C)	Theoric min. outlet T (°C)	Theoric max. outlet T (°C)
2	42.5	2.5	41.2	46.3
4	45	5	43.7	46.3

Table 1.3: *normal setpoint and proportional band values according to the number of steps (heat pump).*

1.4.2 Proportional step adjustment on inlet probe + integral on inlet probe

This adjustment method is based on the sum of two components: proportional and integral.
The proportional component generates the percentage demand for activating/deactivating the steps, as illustrated in the previous paragraph "Proportional step adjustment on inlet probe".
The integral component adds the integral error to the proportional component at regular intervals (integral time: parameter 55.02). The integral error is calculated according to the following formula:

$$\text{Integral error} = \frac{\text{Inlet temperature} - \text{Setpoint}}{\text{Proportional band}} \times 100 \quad [\%]$$

However, the integral component is limited (integral limit: parameter 55.03) to prevent the adjustment from becoming unstable.

If the inlet temperature varies by 5% or more in one second, a rapid change, therefore, the integral component is not calculated.

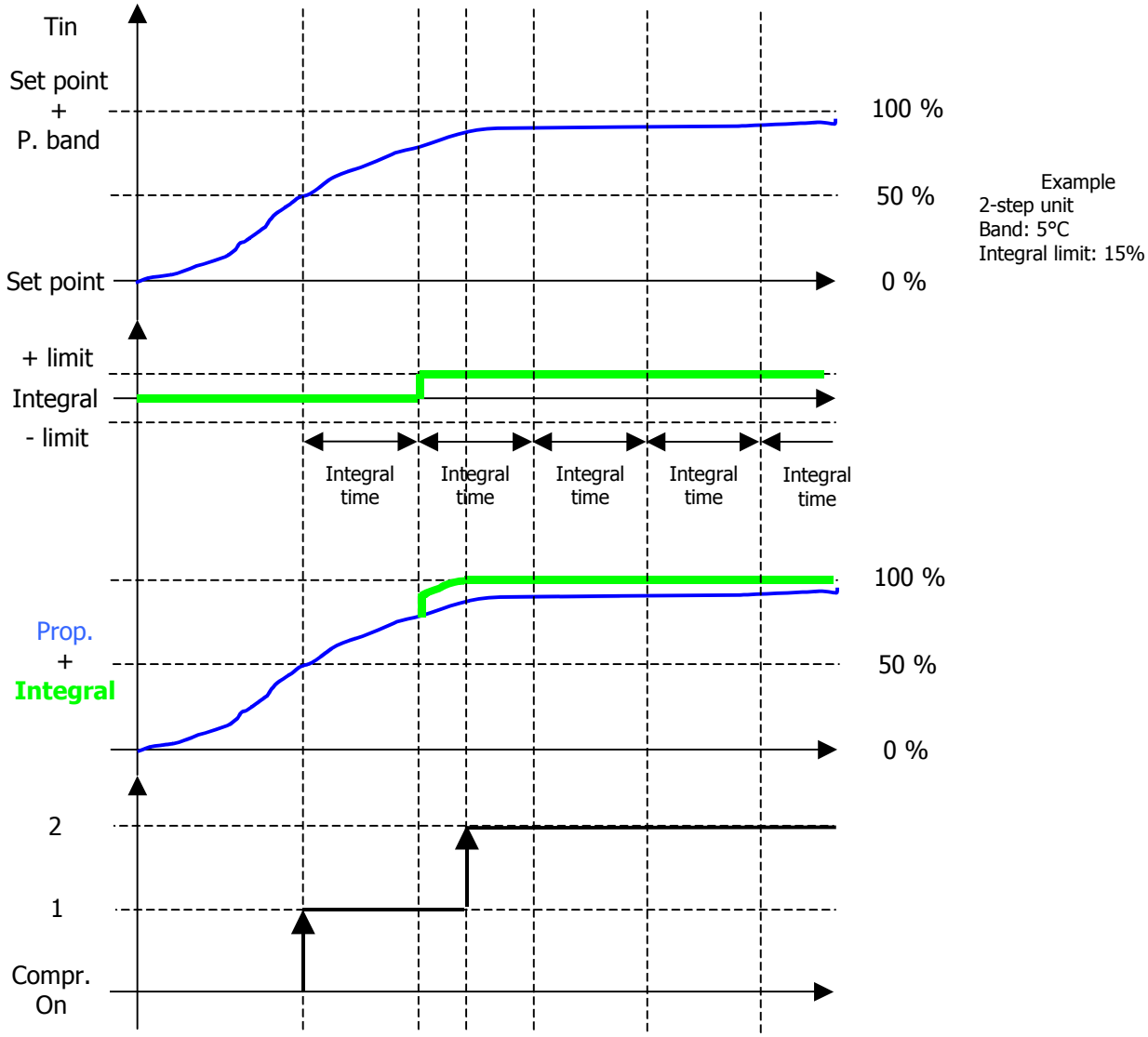


Fig 1.6 Example of a 2 step adjustment in the chiller mode

1.4.3 Quick mind adjustment

Users only need set the required setpoint as the other parameters are adapted to the system by the Quick Mind algorithm. The values normally used are:

SETPOINT Chiller on inlet	11.0 °C
SETPOINT Chiller on outlet	7.0 °C
SETPOINT Heat pump on inlet	42.5 °C
SETPOINT Heat pump on outlet	45.0 °C

QUICK MIND is a self-adapting algorithm for adjusting the temperature of the water treated by an all-in-one unit. The following *figure* shows how this adjustment is made:

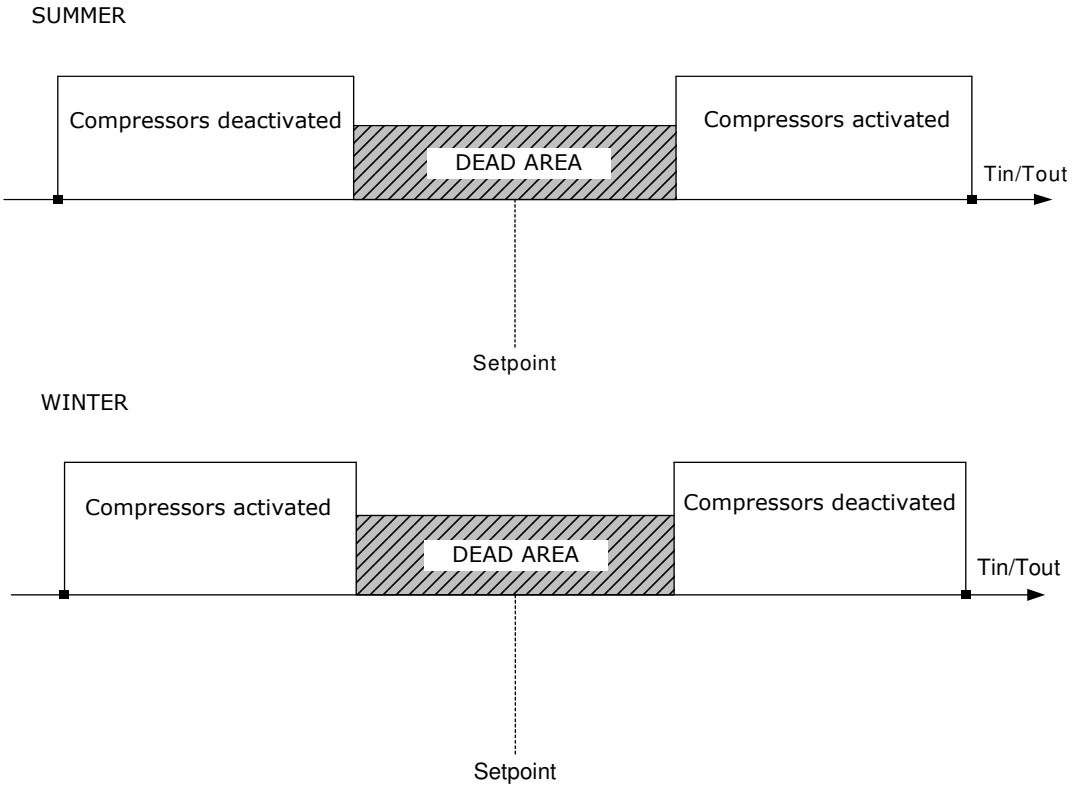


Figure 1.7*: QUICK MIND adjustment model (chiller and heat pump*)

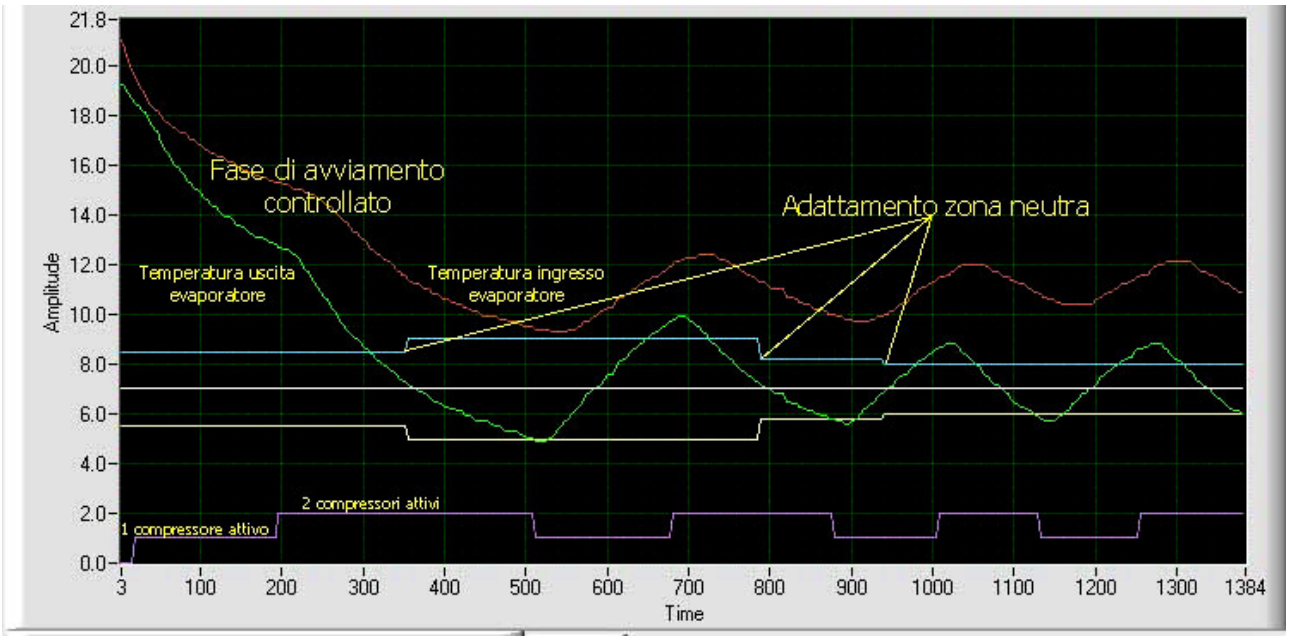
The setpoint remains within a dead area. If the temperature also remains within this area, no change is made to the number of active compressors.
When the temperature leaves the dead area following a change in system load, the compressors are either activated or deactivated in order to return the temperature to the dead area.
The amplitude of the neutral zone depends on the dynamic characteristics of the system and, in particular, on the amount of water it contains and the load. The self-adapting algorithm is able to "measure" system dynamics and calculate the minimum dead area in order to respect compressor activation times and the maximum number of start-ups per hour.
Both return and delivery temperatures can be adjusted.

Special functions are also present which reduce the number of compressor start-ups in the event of very low loads or start-ups of units with significantly higher or lower temperatures than the setpoint.

2 compressors - with maximum permitted number of start-ups per hour 8									
Litres/kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	3.2	3.2	3.4	3.4	3.6	3.8	4.0	4.4	5.2
2 compressors - with maximum permitted number of start-ups per hour 12									
Litres/kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	3.0	3.0	3.0	3.2	3.2	3.4	3.6	3.8	4.3
4 compressors - with maximum permitted number of start-ups per hour 8									
Litres/kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.3	2.7
4 compressors - with maximum permitted number of start-ups per hour 12									
Litres/kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.3	2.7

Table 1.4: *maximum theoretical delivery temperature range at constant part load (depending on the quantity of water contained in the system)*

An example of real data acquired during operation with the Quick Mind adjuster on the delivery side is shown below.
Reference is made to the following figure:



Fase di avviamento controllato = Controlled starting phase
Adattamento zona neutra = Adaptation to dead area
Temperatura uscita evaporatore = Outlet temperature of evaporator
Temperatura ingresso evaporatore = Inlet temperature of evaporator
1 compressore attivo = 1 compressor active
2 compressori attivi = 2 compressors active

Figure 1.8: *example of real data with quick-mind outlet adjustment (x-axis: time in [s]; y-axis: Tout in [°C]).*

This is an example of start-up with a very high initial temperature compared with the setpoint (7°C). About 10 seconds after data acquisition began, one compressor switches on. The second compressor does not switch on immediately as the algorithm which handles start-up checks if one compressor is enough to return delivery temperature to the setpoint and avoid unnecessary start-ups. As the delivery temperature is still at 12 °C after about 200 seconds, the second compressor is also switched on, otherwise it would take too long to reach setpoint.
Following the controlled starting phase, the delivery temperature falls until it "enters" the dead area. The algorithm (at t= 350 s) begins to adapt the amplitude of the dead area in order to respect compressor safety times. As can be seen, the dead area is later reduced (t= 780 s, 950 s) to the absolute minimum amplitude which allows safety times to be respected. It can also be seen that the compressors are activated and deactivated when the outlet temperature reaches the upper or lower limits of the dead area. The example shows that outlet temperature varies by about 3.5 °C during regular operation.

1.4.4 Modulating adjustment of screw compressors

With screw compressors, modulating adjustment is performed on the outlet probe.
Modulating adjustment is only available on "Bitzer" screw compressors.

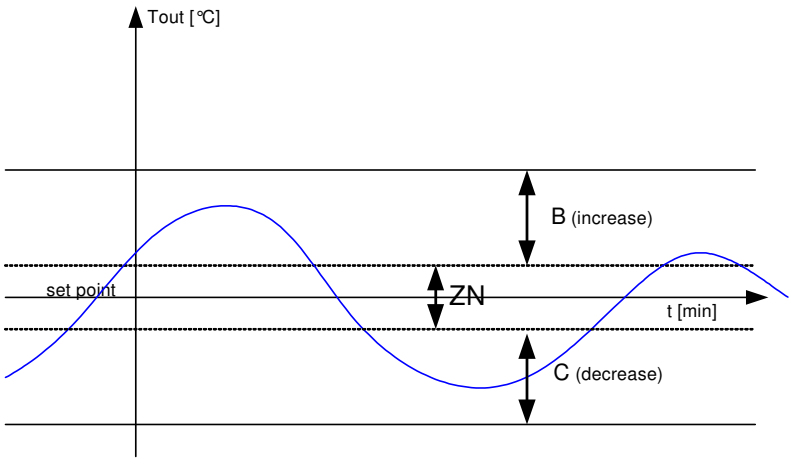


Figure 1.9: modulating adjustment for screw compressors

Reference is made to the *figure to the left:*
The setpoint remains within a dead area. If the temperature also remains within this zone, no change is made to the number of active compressors or their load percentages (position of modulating chamber).
When the temperature rises above zone B following a change in the system load, the compressors are activated in order to return the temperature to the dead area.
Inside zone B, if the outlet temperature derivative is positive, compressor power is increased in order to return the temperature to the dead area (ZN). The further away the temperature is from the setpoint, the greater the increase is.

When the temperature falls below zone C following a change in the system load, the compressors are either deactivated in order to return the temperature to the dead area.
Inside zone C, if the outlet temperature derivative is negative, compressor power is decreased in order to return the temperature to the dead area (ZN). The further away the temperature is from the setpoint, the greater the decrease is.
The amplitude of the neutral zone depends on the dynamic characteristics of the system and, in particular, on the amount of water it contains and the load. The self-adapting algorithm is able to "measure" system dynamics and calculate the minimum dead area in order to respect compressor activation times and the maximum number of start-ups per hour.
When a second or subsequent compressor is switched on, the ones that are already running are forced to a minimum, and the subsequent power increases/decreases are applied to all the compressors.

1.4.5 Adjustment method for centrifuge compressors

Adjustment is combined on the inlet temperature and integral on the outlet temperature.
Some diagrams outlining how this works are shown below.

Suppose we have a single compressor unit.

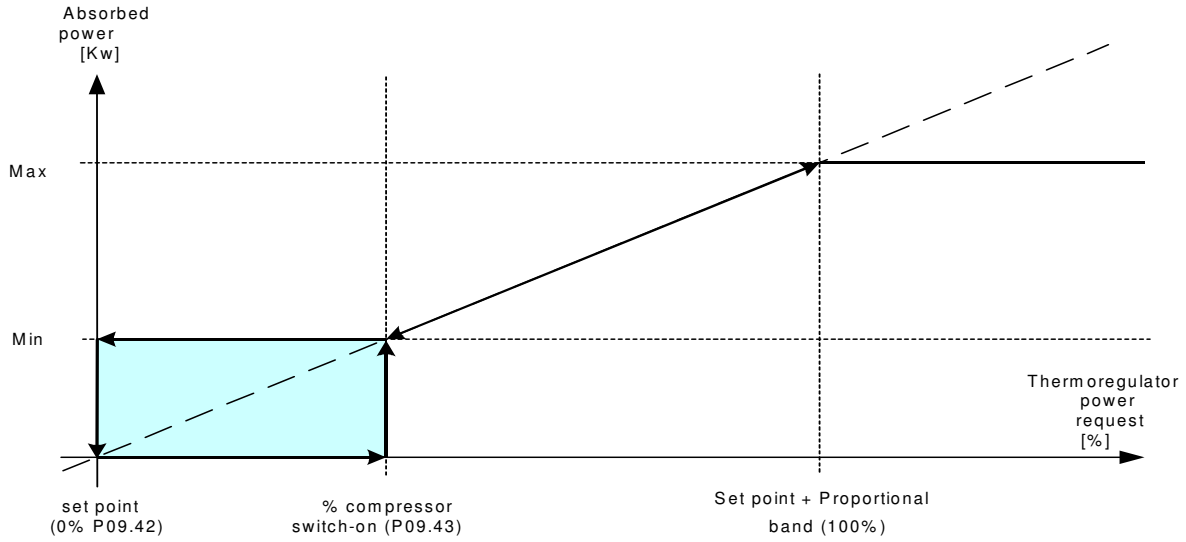


Figure 1.10: *Adjustment for a single-compressor unit. Min=theoretical minimum electrical power absorbed by a compressor, Max=theoretical maximum electrical power absorbed by a compressor*

Let us take a close look at how the compressor is activated.
When the system return temperature lies in zone A (figure 1.11a) or less than the setpoint, the compressor is off. The amplitude of zone A normally coincides with the temperature difference at the evaporator with the compressor running at minimum power.
When the return temperature exceeds zone A (figure 1.11b), the compressor is switched on and then switches off if the temperature falls below the setpoint.
If the return temperature lies in zone B (figure 1.11c), the power of the compressor is modulated according to system requirements.

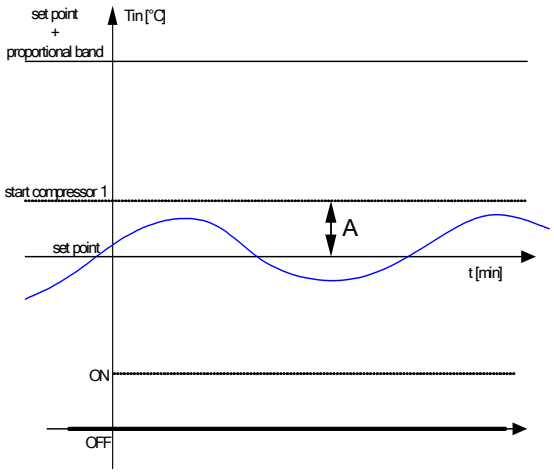


Figure 1.11 a)

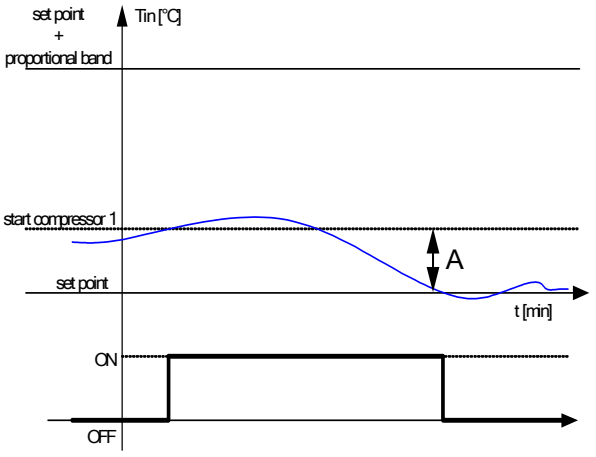


Figure 1.11 b)

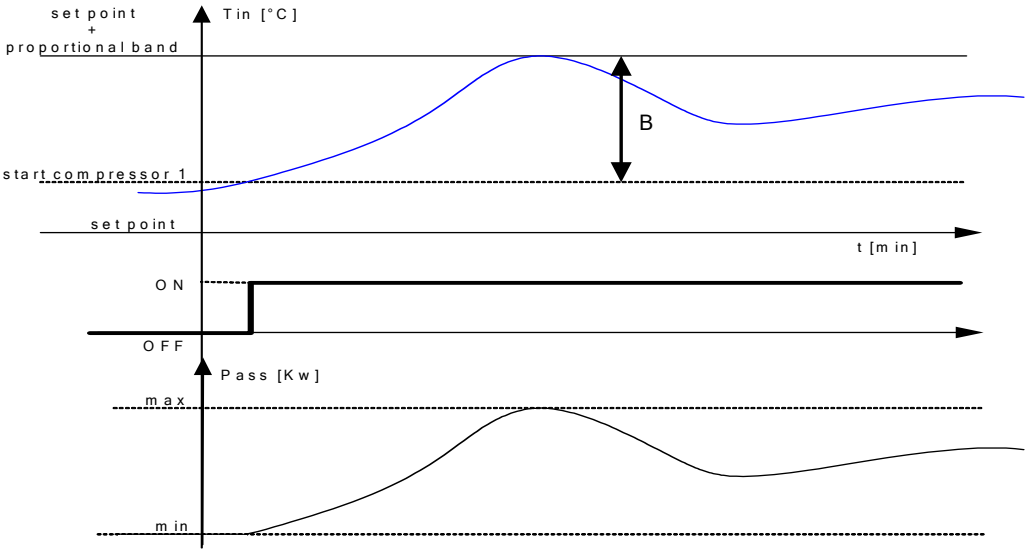


Figure 1.11 c)

Suppose we have a unit with more than one compressor.

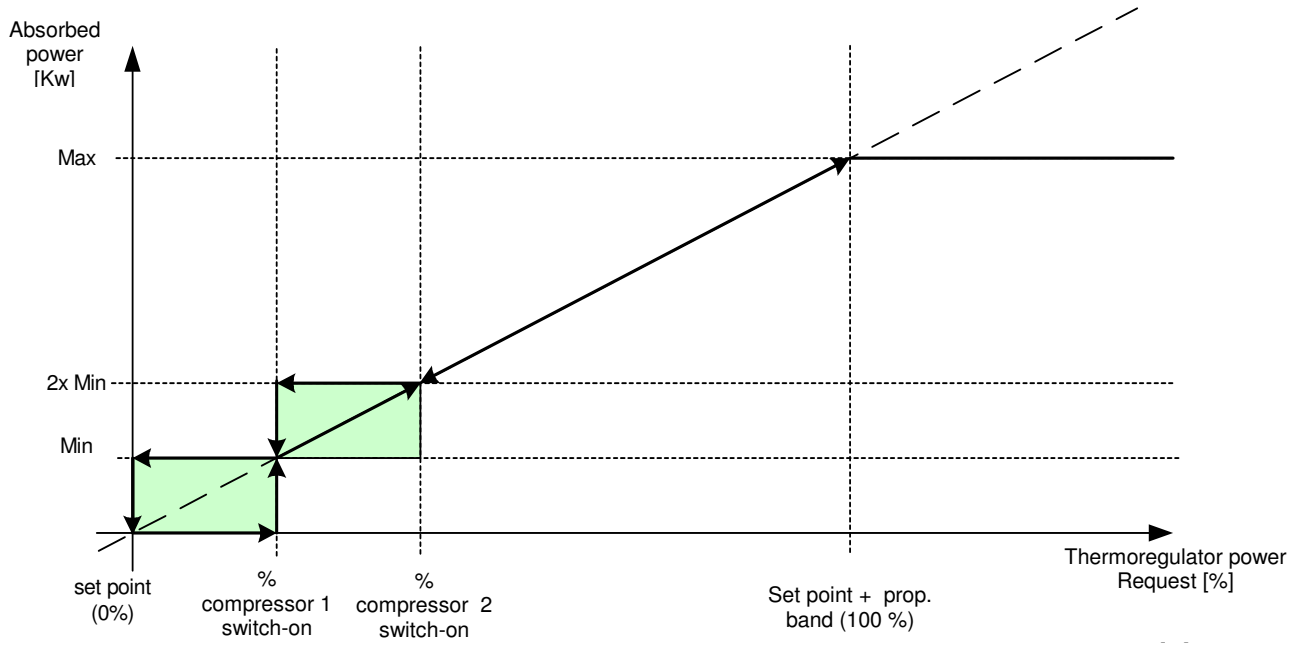


Figure 1.12: *Adjustment for a twin-compressor unit. Min=theoretical minimum electrical power absorbed by a compressor, Max=theoretical maximum electrical power absorbed by a compressor.*

Let us take a close look at how the compressor is activated.
The amplitude of zone A coincides with the temperature difference at the evaporator, with all the compressors running at minimum power.
Zone A is the sum of the zones of each single compressor (A1+A2+…).
When the temperature lies in one of the An zones, the power of the active compressors is modulated according to system requirements.
When moving from an An zone to the one just above it, the active compressors are taken to minimum power while waiting for the next one to be switched on. After that, they continue to be modulated in the new zone.
When moving from an An zone to the one just below it, one of the compressors is switched off while the others are kept at a minimum.

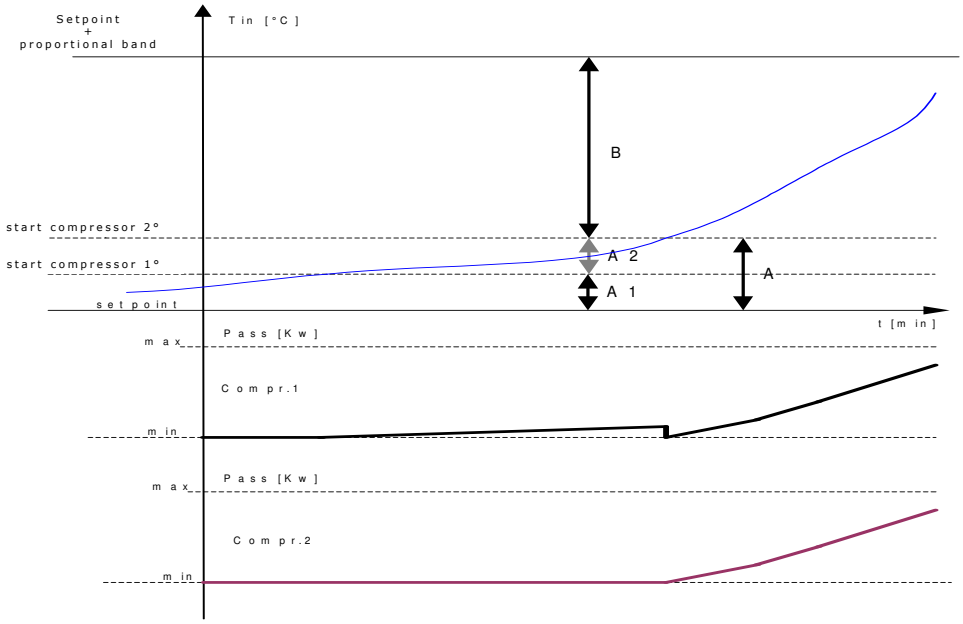


Figure 1.13: *adjustment for a twin-compressor unit*

The following figure, instead, gives an example of the integral contribution of the adjustment method.

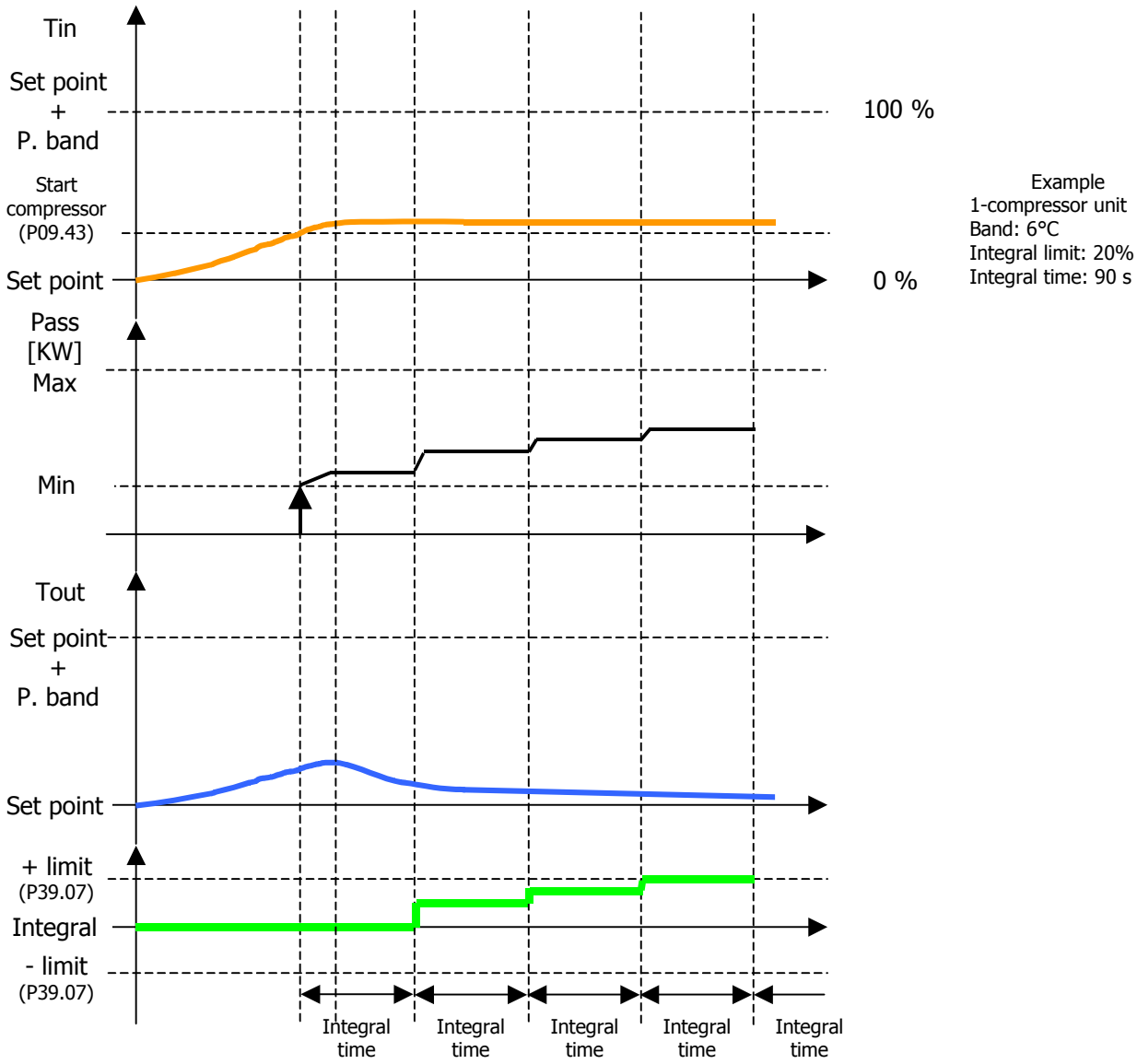


Figure 1.14: *Adjustment for a single-compressor unit: integral contribution*

2 ALARMS

Press the [ALARM] key once to enter the "alarms menu" and view the alarm message along with its code. If there is more than one alarm, scroll the menu using the [UP] and [DOWN] keys.
In the W3000 base, "NO A" is displayed if there is no alarm, otherwise the alarm code appears.
Press any other key to exit from this menu.

To reset the alarm press the [ALARM] key again and hold it down until the message "No Alarm Active" (for W3000 or W3000 compact) or "No A" (for W3000 base) appears. If the message does not appear it means that one or more alarm conditions are still active.

Alarms table

ALARM	DESCRIPTION	details	RESET
002	*Phase sequence / Voltage out of range*	*Faulty phase connection. Totally shuts down the unit (only displayed if the input that detects it is fitted)*	A
003	*Evaporator flow switch*	*No flow to evaporator. The alarms automatically resets 3 times in the same hour if flow is restored within the maximum operating time of the pumps with a small amount of water (P23.34), otherwise, it must be reset manually*	A/M
005	*Low inlet temperature*	*Enabled only in the "heat pump" mode. Low water temperature at evaporator inlet.*	S-A
006	*High inlet temperature*	*Enabled only in the "chiller" mode. High water temperature at evaporator inlet.*	S-A
010	*Evaporator antifreeze*	*Low water temperature at evaporator outlet. Also specifies (except for W3000 base) which evaporator (if more than one) is involved in the alarm condition.*	M
014	*Insufficient system pressure*	*Only displayed if the relative input is present (see I/O menu). Unit stops due to an external pressure switch.*	M
017	*Low external air temperature*	*Indicates that the external air temperature has fallen below the set point.*	S
021	*Low water charge*	*The evaporator inlet temperature changes too quickly and creates a low water level in the system.*	S
022	*Low water flow*	*The temperature difference between the evaporator inlet and outlet is too high and creates a low water flow from the pump*	M
045	*Condenser flow switch*	*Similarly to "Evaporator flow switch" (only for water/water units with freon reversal).*	A/M
046	*Recuperator flow switch*	*No water flow to the recuperator.*	A
051	*Pump 1 maintenance*	*Maintenance hours limit exceeded (in units with just 1 pump, pump 1 is the evaporator pump)*	S
052	*Pump 2 maintenance*	*Pump 2 maintenance hours limit exceeded (in units with more than one pump).*	S
061	*Subcooling driver 1 offline*	*The circuit 1 subcooling management driver is disconnected (only for units with centrifuge compressors)*	A
062	*Subcooling driver 2 offline*	*"as above, for circuit 2"*	A
063	*Subcooling driver 3 offline*	*"as above, for circuit 3"*	A
064	*Subcooling driver 4 offline*	*"as above, for circuit 4"*	A
075	*Condenser antifreeze*	*Low water temperature at condenser outlet. Except for W3000 base, it also specifies which condenser (if more than one) is involved in the alarm condition (only for water/water units with freon reversal).*	M
076	*Recuperator antifreeze*	*Low water temperature at recuperator outlet.*	A
081	*Pump 1 thermal switch*	*Pump 1 overheated (in units with just 1 pump, pump 1 = evaporator pump)*	M

ALARM	DESCRIPTION	details	RESET
082	*Pump 2 thermal switch*	*Pump 2 overheated (in units with more than one pump).*	M
085	*Condenser pump thermal switch*	*Condenser pump overheated (only for water/water units with freon reversal)*	M
086	*Recuperator pump thermal protection*	*Recuperator pump overheated*	M
087	*Glycol pump thermal switch*	*Glycol pump overheated (in units with freecooling).*	S/A
090	*Slave no-link*	*The slave card is disconnected (only for units with 3 or 4 circuits)*	A
091	*Expansion 1 no-link*	*Master expansion 1 unlinked. Apart from W3000 base, the word master appears in units with 3 or 4 circuits.*	A
092	*Expansion 2 no-link*	*"as above, for expansion 2"*	A
093	*Expansion 3 no-link*	*"as above, for expansion 3"*	A
094	*Expansion 4 no-link*	*"as above, for expansion 4"*	A
095	*Expansion 5 no-link*	*"as above, for expansion 5"*	A
101	*Expansion 1 slave no-link*	*Slave expansion 1 unlinked.*	A
102	*Expansion 2 slave no-link*	*"as above, for expansion 2"*	A
103	*Expansion 3 slave no-link*	*"as above, for expansion 3"*	A
104	*Expansion 4 slave no-link*	*"as above, for expansion 4"*	A
105	*Expansion 5 slave no-link*	*"as above, for expansion 5"*	A
111	*Compressor 1 oil*	*No oil on compressor 1 due to low compressor oil level or pressure*	M
112	*Compressor 2 oil*	*"as above, for compressor 2"*	M
113	*Compressor 3 oil*	*"as above, for compressor 3"*	M
114	*Compressor 4 oil*	*"as above, for compressor 4"*	M
121	*High outlet temperature compressor 1*	*Compressor 1 delivery temperature is higher than the set limit.*	M
122	*High outlet temperature compressor 2*	*"as above, for compressor 2"*	M
123	*High outlet temperature compressor 3*	*"as above, for compressor 3"*	M
124	*High outlet temperature compressor 4*	*"as above, for compressor 4"*	M
131	*Compressor 1 fault*	*Compressor 1 motor overheated or any another fault*	M - A/M
132	*Compressor 2 fault*	*"as above, for compressor 2"*	M - A/M
133	*Compressor 3 fault*	*"as above, for compressor 3"*	M - A/M
134	*Compressor 4 fault*	*"as above, for compressor 4"*	M - A/M
141	*Compressor 1 offline*	*No communication with compressor n°1 (only for units with centrifuge compressors)*	A
142	*Compressor 2 offline*	*"as above, for compressor 2"*	A
143	*Compressor 3 offline*	*"as above, for compressor 3"*	A
144	*Compressor 4 offline*	*"as above, for compressor 4"*	A
151	*Compressor 1 maintenance*	*Maintenance hours limit exceeded on compressor 1*	S
152	*Compressor 2 maintenance*	*"as above, for compressor 2"*	S
153	*Compressor 3 maintenance*	*"as above, for compressor 3"*	S
154	*Compressor 4 maintenance*	*"as above, for compressor 4"*	S
171	*Compressor 1 start-up timeout*	*Compressor 1 did not start within the set timeout (only for units with centrifuge compressors)*	A/M
172	*Compressor 2 start-up timeout*	*"as above, for compressor 2"*	A/M
173	*Compressor 3 start-up timeout*	*"as above, for compressor 3"*	A/M
174	*Compressor 4 start-up timeout*	*"as above, for compressor 4"*	A/M
181	*Compressor 1 start-up limit*	*The maximum number of start-ups per hour permitted for compressor 1 has been exceeded (only for quick mind adjustment and modulating adjustment of screw compressors)*	S
182	*Compressor 2 start-up limit*	*"as above, for compressor 2"*	S
183	*Compressor 3 start-up limit*	*"as above, for compressor 3"*	S
184	*Compressor 4 start-up limit*	*"as above, for compressor 4"*	S
211	*Circuit 1 high pressure*	*High pressure on cooling circuit 1*	M
212	*Circuit 2 high pressure*	*"as above, for circuit 2"*	M
213	*Circuit 3 high pressure*	*"as above, for circuit 3"*	M
214	*Circuit 4 high pressure*	*"as above, for circuit 4"*	M
221	*Circuit 1 fan thermal protection*	*One of the condensation fans in circuit 1 overheated and stopped.*	M
222	*Circuit 2 fan thermal protection*	*"as above, for circuit 2"*	M

ALARM	DESCRIPTION	details	RESET
223	*Circuit 3 fan thermal protection*	*“as above, for circuit 3”*	M
224	*Circuit 4 fan thermal protection*	*“as above, for circuit 4”*	M
231	*Circuit 1 low pressure*	*Low pressure detected by the transducer/pressure switch on circuit 1*	A/M
232	*Circuit 2 low pressure*	*“as above, for circuit 2”*	A/M
233	*Circuit 3 low pressure*	*“as above, for circuit 3”*	A/M
234	*Circuit 4 low pressure*	*“as above, for circuit 4”*	A/M
241	*Transducer 1 high pressure*	*High pressure detected by the transducer/pressure switch on cooling circuit 1*	M
242	*Transducer 2 high pressure*	*“as above, for circuit 2”*	M
243	*Transducer 3 high pressure*	*“as above, for circuit 3”*	M
244	*Transducer 4 high pressure*	*“as above, for circuit 4”*	M
251	*Circuit 1 start-up timeout*	*Possible start-up attempt with no Freon in circuit 1.*	A
252	*Circuit 2 start-up timeout*	*“as above, for circuit 2”*	A
253	*Circuit 3 start-up timeout*	*“as above, for circuit 3”*	A
254	*Circuit 4 start-up timeout*	*“as above, for circuit 4”*	A
261	*No freon in circuit 1*	*Possible Freon leakage in circuit 1 as the “Start-up timeout” alarm has continued for at least 8 hours.*	A
262	*No freon in circuit 2*	*“as above, for circuit 2”*	A
263	*No freon in circuit 3*	*“as above, for circuit 3”*	A
264	*No freon in circuit 4*	*“as above, for circuit 4”*	A
271	*Finned coil in circuit 1*	*Circuit 1 condensation coil obstructed*	A/M
272	*Finned coil in circuit 2*	*“as above, for circuit 2”*	A/M
273	*Finned coil in circuit 3*	*“as above, for circuit 3”*	A/M
274	*Finned coil in circuit 4*	*“as above, for circuit 4”*	A/M
281	*Insufficient evaporation pressure circuit 1*	*There may not be any freon in circuit 1 as the evaporation pressure has fallen below the set point*	M
282	*Insufficient evaporation pressure circuit 2*	*“as above, for circuit 2”*	M
283	*Insufficient evaporation pressure circuit 3*	*“as above, for circuit 3”*	M
284	*Insufficient evaporation pressure circuit 4*	*“as above, for circuit 4”*	M
301	*Compressor 1 inverter temperature*	*Compressor 1 inverter overheated*	A/M
302	*Compressor 2 inverter temperature*	*“as above, for compressor 2”*	A/M
303	*Compressor 3 inverter temperature*	*“as above, for compressor 3”*	A/M
304	*Compressor 4 inverter temperature*	*“as above, for compressor 4”*	A/M
311	*Compressor 1 discharge temperature*	*Compressor 1 discharge overtemperature (only for units with centrifuge compressors)*	A/M
312	*Compressor 2 discharge temperature*	*“as above, for compressor 2”*	A/M
313	*Compressor 3 discharge temperature*	*“as above, for compressor 3”*	A/M
314	*Compressor 4 discharge temperature*	*“as above, for compressor 4”*	A/M
321	*Compressor 1 low pressure*	*Compressor 1 suction pressure under min. (only for units with centrifuge compressors)*	A/M
322	*Compressor 2 low pressure*	*“as above, for compressor 2”*	A/M
323	*Compressor 3 low pressure*	*“as above, for compressor 3”*	A/M
324	*Compressor 4 low pressure*	*“as above, for compressor 4”*	A/M
331	*Compressor 1 high pressure*	*Compressor 1 compression pressure over max. (only for units with centrifuge compressors)*	B
332	*Compressor 2 high pressure*	*“as above, for compressor 2”*	B
333	*Compressor 3 high pressure*	*“as above, for compressor 3”*	B
334	*Compressor 4 high pressure*	*“as above, for compressor 4”*	B
341	*Compressor 1 input current*	*Compressor 1 current input over max. (only for units with centrifuge compressors)*	B
342	*Compressor 2 input current*	*“as above, for compressor 2”*	B
343	*Compressor 3 input current*	*“as above, for compressor 3”*	B
344	*Compressor 4 input current*	*“as above, for compressor 4”*	B
351	*Compressor 1 rotor temperature*	*Compressor 1 rotor temperature over max. (only for units with centrifuge compressors)*	A/M
352	*Compressor 2 rotor temperature*	*“as above, for compressor 2”*	A/M
353	*Compressor 3 rotor temperature*	*“as above, for compressor 3”*	A/M
354	*Compressor 4 rotor temperature*	*“as above, for compressor 4”*	A/M
361	*Compressor 1 compression ratio*	*Compressor 1 compression ratio over max. (only for units with centrifuge compressors)*	A/M
362	*Compressor 2 compression ratio*	*“as above, for compressor 2”*	A/M

ALARM	DESCRIPTION	details	RESET
363	*Compressor 3 compression ratio*	*“as above, for compressor 3”*	A/M
364	*Compressor 4 compression ratio*	*“as above, for compressor 4”*	A/M
371	*Compressor 1 bearings*	*Compressor 1 bearings faulty (only for units with centrifuge compressors)*	A/M
372	*Compressor 2 bearings*	*“as above, for compressor 2”*	A/M
373	*Compressor 3 bearings*	*“as above, for compressor 3”*	A/M
374	*Compressor 4 bearings*	*“as above, for compressor 4”*	A/M
381	*Compressor 1 SCR temperature*	*Compressor 1 SCR temperature over max. (only for units with centrifuge compressors)*	A/M
382	*Compressor 2 SCR temperature*	*“as above, for compressor 2”*	A/M
383	*Compressor 3 SCR temperature*	*“as above, for compressor 3”*	A/M
384	*Compressor 4 SCR temperature*	*“as above, for compressor 4”*	A/M
391	*Compressor 1 rotor block*	*Compressor 1 blocked (only for units with centrifuge compressors)*	A/M
392	*Compressor 2 rotor block*	*“as above, for compressor 2”*	A/M
393	*Compressor 3 rotor block*	*“as above, for compressor 3”*	A/M
394	*Compressor 4 rotor block*	*“as above, for compressor 4”*	A/M
400	*Probe 10 error*	*Probe 10 error. Values read by probe 10 out of range.*	A
401	*Probe 1 error*	*“analogue, as above”*	A
402	*Probe 2 error*	*“analogue, as above”*	A
403	*Probe 3 error*	*“analogue, as above”*	A
404	*Probe 4 error*	*“analogue, as above”*	A
405	*Probe 5 error*	*“analogue, as above”*	A
406	*Probe 6 error*	*“analogue, as above”*	A
407	*Probe 7 error*	*“analogue, as above”*	A
408	*Probe 8 error*	*“analogue, as above”*	A
409	*Probe 9 error*	*“analogue, as above”*	A
411	*Exp 1 Probe 1 error*	*Probe 1, expansion 1 fault*	A
412	*Exp 1 Probe 2 error*	*“analogue, as above”*	A
413	*Exp 1 Probe 3 error*	*“analogue, as above”*	A
414	*Exp 1 Probe 4 error*	*“analogue, as above”*	A
421	*Exp 2 Probe 1 error*	*“analogue, as above”*	A
422	*Exp 2 Probe 2 error*	*“analogue, as above”*	A
423	*Exp 2 Probe 3 error*	*“analogue, as above”*	A
424	*Exp 2 Probe 4 error*	*“analogue, as above”*	A
425	*Exp 2 Probe 5 error*	*“analogue, as above”*	A
426	*Exp 2 Probe 6 error*	*“analogue, as above”*	A
427	*Exp 2 Probe 7 error*	*“analogue, as above”*	A
428	*Exp 2 Probe 8 error*	*“analogue, as above”*	A
431	*Exp 3 Probe 1 error*	*“analogue, as above”*	A
432	*Exp 3 Probe 2 error*	*“analogue, as above”*	A
433	*Exp 3 Probe 3 error*	*“analogue, as above”*	A
434	*Exp 3 Probe 4 error*	*“analogue, as above”*	A
451	*Exp 5 Probe 1 error*	*“analogue, as above”*	A
452	*Exp 5 Probe 2 error*	*“analogue, as above”*	A
453	*Exp 5 Probe 3 error*	*“analogue, as above”*	A
454	*Exp 5 Probe 4 error*	*“analogue, as above”*	A
500	*Probe 10 error slave*	*Slave probe 10 faulty - only in units with more than 2 circuits*	A
501	*Probe 1 error slave*	*“analogue, as above”*	A
502	*Probe 2 error slave*	*“analogue, as above”*	A
503	*Probe 3 error slave*	*“analogue, as above”*	A
504	*Probe 4 error slave*	*“analogue, as above”*	A
505	*Probe 5 error slave*	*“analogue, as above”*	A
506	*Probe 6 error slave*	*“analogue, as above”*	A
507	*Probe 7 error slave*	*“analogue, as above”*	A
508	*Probe 8 error slave*	*“analogue, as above”*	A
509	*Probe 9 error slave*	*“analogue, as above”*	A
511	*Exp 1 Probe 1 error slave*	*Probe 1, expansion 1, connected to slave faulty*	A
512	*Exp 1 Probe 2 error slave*	*“analogue, as above”*	A
513	*Exp 1 Probe 3 error slave*	*“analogue, as above”*	A
514	*Exp 1 Probe 4 error slave*	*“analogue, as above”*	A
521	*Exp 2 Probe 1 error slave*	*“analogue, as above”*	A

ALARM	DESCRIPTION	details	RESET
522	*Exp 2 Probe 2 error slave*	*"analogue, as above"*	A
523	*Exp 2 Probe 3 error slave*	*"analogue, as above"*	A
524	*Exp 2 Probe 4 error slave*	*"analogue, as above"*	A
525	*Exp 2 Probe 5 error slave*	*"analogue, as above"*	A
526	*Exp 2 Probe 6 error slave*	*"analogue, as above"*	A
527	*Exp 2 Probe 7 error slave*	*"analogue, as above"*	A
528	*Exp 2 Probe 8 error slave*	*"analogue, as above"*	A
531	*Exp 3 Probe 1 error slave*	*"analogue, as above"*	A
532	*Exp 3 Probe 2 error slave*	*"analogue, as above"*	A
533	*Exp 3 Probe 3 error slave*	*"analogue, as above"*	A
534	*Exp 3 Probe 4 error slave*	*"analogue, as above"*	A
551	*Exp 5 Probe 1 error slave*	*"analogue, as above"*	A
552	*Exp 5 Probe 2 error slave*	*"analogue, as above"*	A
553	*Exp 5 Probe 3 error slave*	*"analogue, as above"*	A
554	*Exp 5 Probe 4 error slave*	*"analogue, as above"*	A
611	*Antifreeze pre-alarm evaporator 1*	*Low water temperature at evaporator outlet pre-alarm. Also specifies which evaporator (if more than one) is involved in the alarm condition*	S
612	*Antifreeze pre-alarm evaporator 2*	*"as above, for circuit 2"*	S
613	*Antifreeze pre-alarm evaporator 3*	*"as above, for circuit 3"*	S
614	*Antifreeze pre-alarm evaporator 4*	*"as above, for circuit 4"*	S
631	*Low pressure in circuit 1 pre-alarm*	*Low pressure acquired from circuit 1 transducer pre-alarm*	S
632	*Low pressure in circuit 2 pre-alarm*	*"as above, for circuit 2"*	S
633	*Low pressure in circuit 3 pre-alarm*	*"as above, for circuit 3"*	S
634	*Low pressure in circuit 4 pre-alarm*	*"as above, for circuit 4"*	S
641	*High pressure in circuit 1 pre-alarm*	*High pressure acquired from circuit 1 transducer pre-alarm*	S
642	*High pressure in circuit 2 pre-alarm*	*"as above, for circuit 2"*	S
643	*High pressure in circuit 3 pre-alarm*	*"as above, for circuit 3"*	S
644	*High pressure in circuit 4 pre-alarm*	*"as above, for circuit 4"*	S

Key to "RESET" column:

M = Manual reset alarm (if the condition that generated the alarm is eliminated, the alarm must be reset from the keypad); sets "cumulative alarms"
A = Automatic reset alarm (if the condition that generated the alarm is eliminated, the alarm is reset automatically); sets "cumulative alarms"
A/M = Automatic reset alarm for the first "n" cut-ins, after which manual; sets "cumulative alarms"
S = Signal on display (does not set "cumulative alarms")
S-A = Automatic reset signal (that does not stop the machine) or alarm. The mode is selected from a parameter
M - A/M = Manual reset alarm (in hermetic, alternative and screw compressors), automatic for the first "n" cut-ins, after which manual (in centrifuge compressors)
B =Block that cannot be reset from the display; sets "cumulative alarms". To eliminate the alarm, switch the relative compressor off and then back on again.

3 TABLE OF MASKS

Press [UP] or [DOWN] to move from one mask to another inside the same menu.
Press [ENTER] to access the parameter, press [UP] or [DOWN] to change the value of the parameter.

Mask	Description	Para n°
Com. : ON ALXXX Mode : chiller State: ON keypad LIMIT ID:011 U:01	Main display mask. Shows operating mode and status. The unit can be switched on and off with the On/Off command: press "Enter" to move to "Com. :", select the command using the "Up" or "Down" keys and press "Enter" again to confirm. Also displays the following messages: “ALxxx”: alarm active, “Sxxx”: signal active, "U:xx" : unit configuration address, "ID:xxx" : unit supervisor address, Symbols describing unit status also appear (see table at the end of this manual).	
Term. Req. Act. Cool. 042 050 % Rec. 040 050 % Pump time 010s	Shows the request of the controller and the operating percentage of the thermoregulator (cool/heat) and recovery (if possible). Also shows the pump time remaining during switching on and off.	
Temp. In. Out. Evap. 12.5 07.0°C Rec. 35.6 40.5°C Cond. 38.0 42.5°C	Shows the inlet and outlet water temperature. (evaporator, recuperator and condenser are only displayed if they are fitted).	
Temp. In. Out. Evap. 12.5 07.0°C Evap1 07.2°C Evap2 06.9°C	(if 2 evaporators are fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the two evaporators.	
Temp. In. Out. Cond. 24.3 22.4°C Cond.1 22.3°C Cond.2 22.4°C	(if 2 condensers are fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the two condensers.	
Temp. Freecooling 12.3°C External air 15.4°C Optional 19.6°C	(for water-air units) Displays freecooling temperature (in chiller+freecooling units), external air temperature and optional temperature (if the probes are enabled).	
Manuf. Password:0000000000	Access mask to manufacturer menu. Enter the manufacturer password for access. This menu may only be accessed by authorised staff.	
Config. ← ↓	Access mask to user configuration submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Unit: Type : chiller Compressors : Type : hermetic	Mask for setting the type of unit and compressors.	01.01 01.02
Circuits: N° : 2	Sets the number of circuits in the unit	01.03
N° compressors per circuit : 1 N° sep. stages per compressor : 0	Sets the number of compressors per circuit and the number of separation stages per compressor.	01.04 01.05
Condensation: Type : water N° : 2 Reversal : water	Sets the type of condensation (for evaporating units set none). For water-cooled units with Freon-side reversal, select the number of condensers in the unit. For water-cooled heat pumps set the type of circuit reversal (water-side or freon-side reversal).	01.06 01.07 01.08
Fan: Type : axial	Selects the type of ventilation used, only for air-cooled units.	01.09
Evaporation: Type : water N° : 1	Selects the type of evaporation and the number of evaporators in the unit. (For evaporating units set the number of evaporators to 0)	01.10 01.11
Evaporating banks: N° : 1	Sets the number of evaporating banks, only for evaporating units.	01.12

Mask	Description	Para n°
Refrigerant: Type : R407c	Sets the type of refrigerant used.	01.13
Recovery: Enabled: N	Enables recovery. Recovery is enabled automatically in the polyvalent units.	01.14
Freecooling: Enabled: N	Enables freecooling control.	01.15
Enable probes: External temp. N Optional temp. N	Probe enable mask for enabling the external air temperature probe or optional temperature probe (only visible in water-air units)	01.17 01.24
Enable probes: Cond. in. temp. N Cond. out. temp. N	Probe enable mask for enabling the condenser inlet probe or the condenser outlet probe (only visible in water-water chiller and heat pump units with just one condenser; two condenser outlet probes are enabled in the units with two condensers)	01.16 01.25
Enable probes: Pressure N Low Pressure N	Maschera di abilizzazione sonde per l'abilitazione dei trasduttori di alta pressione e di bassa pressione.	01.18 01.19
High pressure transducers Start Scale 00.0bar End Scale 30.0bar	Mask for configuring the high pressure transducers.	01.20 01.21
High pressure transducers Start Scale 00.0bar End Scale 30.0bar	Mask for configuring the low pressure transducers.	01.22 01.23
Global. ← ↓	Access mask to user global parameters submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Enter another manufacturer password 0000000000	Sets a new password. ATTENTION: THE PASSWORD ENTERED IN THIS FIELD IS THE ONLY ONE THAT ALLOWS ACCESS TO THE MANUFACTURER MENU!!	
Display passwords service 0000 user 0000	Displays the passwords governing access to the service and user menus	
W 3000 Code CA 15.00 GB 🔒🔒 Man. C0240011-06-07	This mask contains the reference information of the software [Code] and of the reference technical manual [Man.]. The closed padlock symbol shows that the board is provided with its propriety software; two padlocks appear on units with 3 or 4 circuits	
Functions ← ↓	Access mask to functions submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Setpoint Limitation Winter N	Enables setpoint limitation in summer and winter modes.	05.02
Ext. air winter set point limit. -05.0°C Delta 05.0°C Max var. set 05.0°C	(only with winter setpoint limitation) Enables setting of the external air temperature setpoint below which setpoint limitation begins in the heat pump or recovery only modes and defining the temperature delta at which the maximum setpoint (lowering) variation (negative) takes place.	05.07 05.08 05.09
Max setpoint limit winter 45.0°C	(only with winter setpoint limitation) maximum winter setpoint limit	05.10
Coil fractioning N	Enables coil fractioning.	05.11
Upper set 10.0 bar Upper diff. 05.0 bar Lower set 12.0 bar Lower diff. 00.5 bar	(only with coil fractioning) Sets the upper setpoint and differential and the lower setpoint and differential for controlling coil fractioning.	05.12 05.13 05.14 05.15
Subcooling modulating adjustment Enable N	Enables subcooling modulating adjustment (only for units with centrifuge compressors)	05.30

Mask	Description	Para n°
Subcooling Enabled N	Enables subcooling. This function is only enabled in chillers with recovery mode.	05.16
Subcooling Adjustment start delay 010 s Relay delay 005 s	Sets the delay before subcooling adjustment commences and the delay in the subcooling relay.	05.17 05.18
Subcooling Upper set 06.0 °C Lower set 04.0 °C	Sets the upper and lower sub cooling setpoint.	05.19 05.20
High temp. pressure switch control Enabled: N	Enables setting of the pressure switch control of high temperatures by separating active circuit power	05.21
High temp. pressure switch control Setpoint: 23.5 bar Diff: 02.0 bar	Enables the setpoint and differential for the pressure switch control of high temperatures	05.22 05.23
Pumpdown Disabled	Enables or disables pumpdown. Selects the type of pumpdown to perform, pumpdown during shutdown or cyclical pumpdown or both.	05.24
Pumpdown Setpoint 02.5bar Max. time 03s	Sets end pumpdown setpoint and pumpdown timeout. The pumpdown procedure is interrupted … - when low pressure falls below the setpoint (if there are transducers on the low pressure section) - when the low pressure switch trips (if there are no transducers) - after the timeout (if the procedure is not interrupted by pressure)	05.25 05.26
Cyclical pumpdown Cycle time 030min	Sets the cyclical pumpdown time. A pumpdown is performed each time the set time elapses. The time is reset every time a mode change occurs.	05.27
Pumpdown Chiller S Heatpump N Ch+Rec N Win rec N Sum rec N => 01	Sets the modes in which pumpdown is performed (both cyclical and shutdown). Depending on the type of unit, a smaller or larger number of available modes appear. Pumpdown can be selected in the chiller mode and not in the chiller plus recovery mode, for example.	05.28
All-in-one unit valve override Enabled: Y	Sets valve override for all-in-one units.	05.29
Compressor ← ↓	Access mask to compressor submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Min compressor stop time 0120 s	Minimum time a compressor must stay off after being switched off. (Only visible in the proportional step adjustment mode)	09.02
Min. del. btw starts diff. compr. 0010 s Min. del. btw starts same compr. 0360 s	“Antipeak” time to prevent overcurrents at start-up due to simultaneous demand from more than one compressor. Delay which limits the number of compressor start-ups per hour. (Only visible in the proportional step adjustment mode)	09.03 09.04
Max. compr. starts per hour 10 Min. compr. start time 150 s	Maximum permitted number of compressor starts per hour. Minimum switch-on time of a compressor. (Only visible in the quick mind and modulating adjustment modes of screw compressors)	09.05 09.06
Force at low ext.t. Enable N Setpoint -05.0 °C Diff. 01.0 °C	Only for screw compressors. Enables 100% screw compressor forcing of in the winter mode with low external temperatures.	09.07 09.08 09.09
Oil control type Direct Max time : 1200s Override T: 120s	Selects the screw compressor oil level control mode: None, Direct, Indirect and Direct + Indirect.	09.58 09.11 09.12
Width of dead area: 015 %	Sets the percentage with respect to the dead area and around the setpoint in which the compressor is not modulated. (only for modulating screw compressors)	09.59
Power incr. impulse: Period: 010 s Min. dur.: 00.3 s Max. dur.: 02.0 s	Sets the period and duration of the power increase impulse. (Only for modulating adjustment of screw compressors)	09.14 09.15 09.16
Power decr. impulse: Period: 010 s Min. dur.: 00.5 s Max. dur.: 03.0 s	Sets the period and duration of the power decrease impulse. (Only for modulating adjustment of screw compressors)	09.17 09.18 09.19

Mask	Description	Para n°
Compressor start time: 30 s	Sets the start-up time of the compressor, that, is, the time the compressor remains in the no-load start mode before it starts adjusting. (Only for modulating adjustment of screw compressors)	09.20
Min. time sep. stages active: 10 s	Sets the minimum time the separation stages remain active.	09.21
Time compressor oil valve active 10 s	Sets the time the compressor oil valve remains active.	09.22
Model: Bitzer	Sets the compressor model.	09.23
Economiser: Enable N Start delay 120 s	Enables the economiser and sets the start delay.	09.24 09.25
Economiser disable: Setpoint 15.0 bar Diff. 2.0 bar	Sets the setpoint and differential for disabling the economiser.	09.26 09.27
Compressor discharge temperature control Enabled: N	Enables compressor discharge temperature control for liquid injection.	09.28
Compressor discharge temperature control Setpoint 110.0 °C Diff. 10.0 °C	Sets the setpoint and differential for liquid injection.	09.29 09.30
Config. discharge temperature probes for compressors: NTC 0-150°C	Mask only visible in screw compressors that allow the type of discharge temperature probe used to be selected.	09.60
Compressor modulation Minimum: 010 % Maximum: 090 %	Sets minimum and maximum values for centrifugal compressor modulation.	09.31 09.32
Start revs: 03300 rpm Compressor start time: 020 s	Sets the number of revs for calculating opening of the liquid line solenoid valve. Sets minimum revs timeout during start-up. (Only for centrifuge compressors)	09.33 09.34
Number of bypass valves 1	Sets the number of bypass valves (N.B.: controlled by the board and not by external timers) (Only for centrifuge compressors)	09.35
Start compression 2.2 Start bypass delay 020 s	Sets the compression ratio for calculating opening of the liquid line solenoid valve. Sets the bypass solenoid valve closing delay. (Only for centrifuge compressors)	09.36 09.37
Power request increase Integral T. 005 sec Minimum Var. 001 %	Sets the integral time and minimum variation for increasing the power request. (Only for centrifuge compressors)	09.38 09.39
Power request decrease Integral T. 005 sec Minimum Var. 001 %	Sets the integral time and minimum variation for decreasing the power request. (Only for centrifuge compressors)	09.40 09.41
Centrifuge Comp. off: on: Comp. 1 000% 040% Comp. 2 000% 040%	Sets the enable and disable percentage with respect to the proportional band for each centrifuge compressor.	09.42 09.43 09.44 09.45
Centrifuge Comp. off: on: Comp. 3 000% 040% Comp. 4 000% 040%	Sets the enable and disable percentage with respect to the proportional band for each centrifuge compressor.	09.46 09.47 09.48 09.49
Valves ← ↓	Access mask to valves submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Status configuration S0 => off Valves: CCCCCCCCCC => 00	Status editor mask. Configures the valves (A=valve open, C=valve closed) in each status (S0,S1,… S12). Valve configuration is automatically converted. It is also possible to directly set the coded information, the state of the valves is automatically decoded and memorised.	

Mask	Description	Para n°
	Status Code Description S0 off Off, circuit off S1 chiller on Chiller on S2 ch+rec on Chiller plus recovery on S3 chiller pd Chiller in pumpdown S4 chiller off Chiller off S5 rec on Recovery on S6 defrost Defrost S7 rec pd Recovery in pumpdown S8 rec off Recovery off S9 heatpump on Heat pump on S10 ch+rec pd Chiller plus recovery in pumpdown S11 heatpump pd Heat pump in pumpdown S12 heatpump off Heat pump off	13.01 13.02 13.03 13.04 13.05 13.06 13.07 13.08 13.09 13.10 13.11 13.12 13.13
Valve release time: V1: 000 s V2: 000 s V3: 000 s V4: 000 s V5: 000 s	Sets the valve release time.	13.14 13.15 13.16 13.17 13.18
Valve release time : V6: 000 s V7: 000 s V8: 000 s V9: 000 s V10:000 s	Sets the valve release time.	13.19 13.20 13.21 13.22 13.23
C1: off valve:CCCCCCCCCC C2: off valve:CCCCCCCCCC	Displays the status of the circuits and circuit valves.	
C3: off valve:CCCCCCCCCC C4: off valve:CCCCCCCCCC	Displays the status of the circuits and circuit valves.	
Defrost ← ↓	Access mask to defrost submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Defrost config. Timer + Auto Tuning	Sets 3 defrost types: Traditional, defrosting at fixed intervals, Timer Tuning, defrosting at dynamic intervals, Timer Tuning + Auto Tuning, defrosting at dynamic intervals, also analysing evaporation pressure values.	21.01
Defrost parameters: Start 03.0 bar Stop 14.0 bar	Defines the pressure setpoints for start and stop defrost.	21.02 21.03
Defrost parameters: Delay 01800 s Max. time 00300 s Drip time 120 s	Sets defrost time parameters. Delay: cumulative time measured before the defrost procedure starts. Max. time: maximum duration of defrost procedure. Drip time: duration of coil dripping	21.04 21.05 21.06
Timer tuning defrost Ref. time 120 s Ref. T. -10°C 180 s Ref. T. +10°C 060 s	Sets certain timer tuning defrost parameters. Nominal defrost reference time (display only). Reference time at -10°C used to calculate the nominal reference time. Reference time at +10°C used to calculate the nominal reference time.	21.08 21.07
Timer tuning maximum delay variation perc. 20 %	Sets the maximum current defrost delay variation percentage.	21.09
Maximum defrosts per hour 3	Sets the maximum number of defrosts in an hour. If this value is exceeded, the finned coil alarm appears.	21.10
Ext t.-Evap. t. calc. interval 300 s t.ext-t.evap. var. speed threshold 3.0°C	(only for auto tuning) Maximum rate of change in the difference between external temperature and evaporation temperature. If exceeded, it force activates the defrost procedure after the bypass time. The calculation is updated every "calculation interval"	21.11 21.12
Ext t.-evap. t. difference threshold for changing defrost delay 15.0°C	(only for auto tuning) Initial threshold for the difference between external temperature and evaporation temperature for changing the defrost start delay.	21.13
Threshold offset Start var. 2.0°C Variation factor 1 %	(only for auto tuning) Offset used to calculate the threshold for changing the defrost start delay. Defrost start delay change factor provided by Auto Tuning Defrost.	21.14 21.15

Mask	Description	Para n°
Circuit start bypass 120 s Start variation delay 600 s	(only for auto tuning) Bypass delay between the start of the circuits and the moment the defrost procedure is force changed if the maximum speed of change in the difference between the external temperature and the evaporation temperature is exceeded. If the difference between the external temperature and the evaporation temperature is greater than the calculated threshold, when the "Variation start delay" elapses, the defrost start delay specified in the "Change factor" parameter commences.	21.16 21.17
Minimum derived evaporation pressure -00.1 bar/m	(only for auto tuning) Maximum permitted change in evaporation pressure before changing the defrost start delay.	21.18
Forced defrosting with low pressure Enabled Y Threshold 1.7 bar	Minimum permitted evaporation pressure in heatpump. If the pressure falls below this value, defrosting is forced.	21.19 21.20
Step override in heatpump separate 1.7 bar restore 2.1 bar	Evaporation pressure values at which the circuit with more than one hermetic compressor per circuit is "separated" to return the operating point within limits. Evaporation pressure value at which compressor "separation" terminates.	21.21 21.22
Enable Free Defrost Y Minimum external temperature 04.0°C	Enables the Free-Defrost algorithm and sets the minimum external temperature for operation.	21.23 21.24
Drip phase with compressors on N	Enables the drip phase with the compressors on after defrosting.	21.25
Recovery ← ↓	Access mask to recovery submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Chiller override fm recovery pressure Setpoint 23.5 bar Diff. 5.0 bar	Defines the pressure setpoint and differential at which the recovery mode is forced to chiller.	15.03 15.04
Cyclical override to chiller from ch+rec Enable N Cycle time 060min	Enables override to the chiller mode from the chiller plus recovery mode (only for units with recovery). Sets the cycle time of this function, that is, the maximum time in the chiller plus recovery mode. The time is reset every time a mode change occurs. (NB.: pumpdown is also considered a mode change and therefore the cyclical pumpdown function in the Ch+rec mode is inconsistent with cyclical override, the function will be performed with the lowest cycle time.)	15.05 15.06
Override time in chiller before passing to ch+rec 120 s	Changing mode to Chiller+Rec. On, requires the Chiller On mode. This mask sets the Chiller On mode timeout before passing to the Chiller+Rec On mode.	15.07
Condens. ← ↓	Access mask to condensation submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Condensation control Enable : Y Type : Step Cont. N° steps : 3	Enables condensation control, the type and number of steps.	17.01 17.02 17.03
Condensation control Type: Separate Mod.: PWM	Selects between individual and contemporary condensation. Also sets linear fan operation (0:Standard - 1:0-10V - 2:PWM - 3:FAE - 4:0-10V C5110973)	17.04 17.05
Condensation control Logic: direct	Selects the type of valve for condensation in water-cooled chillers.	17.06
Enable max. override Chiller cond. NO Setpoint 23.0 bar Diff. 3.0 bar	Enables 100% forced condensation in the chiller mode and establishes the setpoint.	17.10 17.11 17.12
Enable max. override Heat pump evap. NO Setpoint 01.0 bar Diff. 0.5 bar	Used to enable 100% forced evaporation in the heat pump mode and establish the setpoint.	17.13 17.14 17.15
Cont. cond. control Chiller Setpoint 14.0 bar Diff. 05.0 bar	Sets the setpoint and differential for continuous condensation adjustment in the chiller mode.	17.32 17.33
Cont. cond. control HeatPump Setpoint 06.0 bar Diff. 01.0 bar	Sets the setpoint and differential for continuous condensation adjustment in the heat pump mode.	17.34 17.35

Mask	Description	Para n°
Cont. condensation control Max. lim. 100 % Min. lim. 030 %	Sets maximum and minimum condensation with continuous adjustment. This is fan speed or condensation valve opening.	17.36 17.37
Cont. condensation control Min. lim. Adjustment off: Y Diff. 01.0bar	Enables the fans or the condensation valve when the minimum condensation limit is reached with continuous adjustment. The set condensation minimum may remain enabled or adjustment can be turned off when pressure falls below the condensation setpoint of the differential value.	17.38 17.39
Modulating valve management N Opening time 100% 070 s	Enables management of the 2- or 3-way molulating valve connected to the heat exchanger with well/tower water and sets opening time from 0% to 100%.	17.40 17.41
Alarms ← ↓	Access mask to alarms submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
High pressure from transducers alarm: Setpoint 28.0 bar Diff. 07.0 bar	Sets the setpoint and differential for activating the high pressure from transducers alarm.	23.01 23.02
Low press. alarm N° resets 3 Start bypass 120 s	Sets the parameters for activating the low pressure alarm. Number of times the alarm has triggered in the previous hour and been reset automatically within the set period, the next time the alarm triggers it must be reset manually. Low pressure alarm by-pass delay.	23.03 23.04
Low pressure alarm from transducers: Setpoint 01.6 bar Diff. 00.9 bar	Sets the setpoint and differential for activating and resetting the low pressure alarms (only if the low pressure transducers are configured)	23.05 23.06
Low pressure alarm low air temp. Enabled N Start timeout 120 s	Enables external air temperature control for activating the low pressure alarm and sets the start timeout.	23.07 23.08
Low pressure alarm low air temp. Setpoint 0.1 bar Diff. 0.5 bar	Sets the setpoint and differential for activating and resetting the low pressure alarms with control on external air temperature	23.09 23.10
Compressor alarms N° resets 3	Sets the maximum number of automatic reset compressor fault alarms in the arc of an hour, after which the compressor fault alarm must be reset manually. (only for centrifugal compressors)	23.11
Compressor thermal protection alarm: Bypass time 0010 s	The compressor is switched off for a set time when the unit is powered. Must be set to 360 secs only for BRISTOL compressors	23.12
Compressor discharge temperature alarm Setpoint 125.0°C Diff. 10.0°C	Sets the setpoint and differential for activating the high compressor discharge temperature alarm.	23.13 23.14
Compressor oil alarm: Start delay 090 s Running delay 090 s	Sets the compressor oil alarm delay	23.15 23.16
Flow switch alarm N° resets 3	Sets the maximum number of automatic reset flow switch fault alarms in the arc of an hour, after which the flow switch fault alarm must be reset manually. The flow switch alarm is always automatically reset until the maximum pump alarm operation delay has elapsed. The pump then turns off and the flow switch alarm must be manually reset.	23.25
Max. pump op. and flow auto reset time in al. mode 015 s	Maximum pump operation time in flow alarm mode Following alarms requiring the pump to start (antifreeze alarm, low flow rate alarm, evaporator flow switch alarm) the pump is kept running in order to reset normal conditions. In any case, the time indicated is the time in which the flow switch alarm is automatically reset. After this delay, the flow switch alarm must be manually reset.	23.34
Evaporator flow switch alarm: Start delay 010 s Running delay 001 s	Configuration parameters for evaporator flow switch alarm. Start delay: minimum time during which the flow must remain constant before the compressors start running. Running delay: minimum time before the flow switch triggers with the compressors running.	23.26 23.27
Recuperator flow switch alarm: Start delay 010 s Running delay 001 s	Configuration parameters for recuperator flow switch alarm. Start delay: minimum time during which the flow must remain constant before the compressors start running. Running delay: minimum time before the flow switch triggers with the compressors running.	23.28 23.29
Condenser flow switch alarm: Start delay 010 s Running delay 001 s	Configuration parameters for condenser flow switch alarm. Start delay: minimum time during which the flow must remain constant before the compressors start running. Running delay: minimum time before the flow switch triggers with the compressors running. (only for water/water units with freon reversal)	23.30 23.31

Mask	Description	Para n°
Low ext. air temp. Enabled N Setpoint −25.0 °C Diff. 02.0 °C	Enables external air temperature control for activating the low external air temperature alarm. Sets the alarm cut-in setpoint and differential This function automatically enables the external air temperature probe.	35.50 35.51 35.52
Default ← ↓	Access mask to initialisation menu. Press "Up" or "Down" to scroll the other mask and "Esc" to return to the submenu. The mask is not displayed when the chiller is ON.	
Reset chiller to default values N	This restores the default values. Deletes the memory and installs "logical" values. The chiller must then be programmed with the parameter set during factory testing.	
Load configuration N	Loads parameters from file. The unit is configured with factory settings. NB: Run default before Load configuration.	
Alarmi log on display Delete N	Deletes the contents of the alarms log on the display	
Service Password: 0000	Access mask to service menu. Enter the service password for access. This menu may only be accessed by authorised staff.	
Adjust. ← ↓	Access screen to adjustment menu. Press "Up" or "Down" to scroll the other mask and "Esc" to return to the submenu.	
Inlet adjustment: Type PROPORTION.	Defines the type of adjustment. (only visible in the step inlet adjustment mode)	55.01
Integration time: 0090 s Integration correction limit: 020 %	Sets integration time and correction limit (displayed in the proportional step inlet adjustment mode with proportional + integral adjustment type)	55.02 55.03
Chiller setpoint limits: Low 11.0 °C High 20.0 °C	Maximum and minimum setpoint values that can be set with inlet adjustment N.B.: For low temperature units, the minimum value that can be set for the low limit is equal to the antifreeze setpoint +2°C (also check the value set for forced shut-down in the Quick Mind adjustment mode and modulating adjustment mode with screw compressors).	55.04 55.05 55.06
Chiller setpoint limits: Low 06.0 °C High 18.0 °C	Maximum and minimum setpoint values that can be set with outlet adjustment N.B.: For low temperature units, the minimum value that can be set for the low limit is equal to the antifreeze setpoint +2°C (also check the value set for forced shut-down in the Quick Mind adjustment mode and modulating adjustment mode with screw compressors).	55.07 55.08
Heat pump setpoint limits: Low 30.0 °C High 44.0 °C	Maximum and minimum setpoint values that can be set with inlet adjustment (only visible if the heat pump configuration is set)	55.09 55.10
Heat pump setpoint limits: Low 30.0 °C High 48.0 °C	Maximum and minimum setpoint values that can be set with outlet adjustment (only visible if the heat pump configuration is set)	55.11 55.12
Recovery setpoint limits: Low 30.0 °C High 45.0 °C	Maximum and minimum recovery setpoints. (only visible if recovery is configured)	55.13 55.14
Forced shutdown Chiller 04.5 °C Heat pump 51.0 °C	(Only in the Quick Mind and modulating adjustment modes of screw compressors). Forces compressor shut-down if: Tout Chiller < chiller minimum or Tout Heat Pump > heat pump maximum	55.15 55.16
Temperature adjustment band 02.5 °C Recovery adjustment band 02.5 °C	Sets the temperature and recovery adjustment band.	55.17 55.18
Dual setpoint Enable N	Enables selection of a second setpoint via an external contact (only displayed on compatible units).	55.19
Setpoint variation Enabled 4-20 mA Min. 00.0 °C Max. 06.0 °C	Enables setpoint variation through an external input which can be configured at 4-20mA or 0-5V. Maximum and minimum variation limits can also be set. If time bands have been enabled the external setpoint cannot be enabled (only displayed on compatible units). For units with alternative or screw compressors only a 4-20 mA variation can be selected.	55.20 55.21 55.22 55.23

Mask	Description	Para n°
Rec. setpoint var. Enabled 4-20 mA Min. 00.0 °C Max. 06.0 °C	Enables recovery setpoint variation through an external input which can be configured at 4-20mA or 0-5V. Maximum and minimum variation limits can also be set. If time bands have been enabled the external setpoint cannot be enabled (only displayed on compatible units). For units with alternative or screw compressors only a 4-20 mA variation can be selected.	55.24 55.25 55.26 55.27
Pump config. Type of use: automatic	(Only displayed if more than one pump is set) Selects whether to use both pumps through hourly rotation (FIFO if they have the same number of operating hours) or override pump 1 or pump 2.	55.28
Minimum start delay between pump and compressors 060 s	Defines the delay between pump start-up and compressor start-up after the unit has been switched on.	55.29
Pump shutdown delay 060 s	Defines pump shutdown delay after the unit has been switched off.	55.30
Demand limit Enable N	Enables limitation of the power delivered by the unit.	55.31
Demand limit Chiller 050 % Heat pump 050 % Recovery 050 %	Sets the maximum percentage of power delivered by the unit in the chiller, heat pump (in heat pump units) and recovery (in compatible units where possible) modes.	55.32 55.33 55.34
Enable from dig. in.: On/Off: Y Chiller/HP: N	Allows the on/off status of the unit to be selected from external enables. Also performs chiller/heat pump switching in heat pump units.	55.35 55.36
Pumps ← ↓	Access mask to pumps submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Evaporator pumps configuration: N° Pumps 1	Sets the n° of pumps in the unit.	07.01
Enable recuperator pumps: N	Enables the pump on the recuperator.	07.03
Enable condenser pump: N	Enables the condenser pump overheated (only for water/water units with freon reversal)	07.04
Pump changeover after long activity: Threshold 0007 days Max diff. 0060 days	Defines, in the automatic mode, the number of days of continuous operation after which a pump is stopped and the other one started. Max. diff. defines the maximum difference in hours between the two pumps over which the threshold value for the pump with less hours is doubled in order to balance pump hours more rapidly. Only appears for units with two pumps.	07.08 07.09
Long inactivity: Test pumps Y Threshold 0030 days Impulse 10 s	When enabled, this function activates the pumps for the set impulse time after a period of activity reaches the threshold value. This appears with at least one pump enabled.	07.10 07.11 07.12
Freecool. ← ↓	Access mask to freecooling submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Freecooling Delta 01.0 °C Offset -04.0 °C Diff. 01.0 °C	Sets the freecooling adjustment parameters. The delta, the offset and the differential for freecooling adjustment are set here.	19.01 19.02 19.03
Direct valve Fans hysteresis 0.3 °C delay 020 s	Selects the type of control for the freecooling valve, direct or reverse. Also sets the hysteresis of each fan and the start/stop delay for each fan.	19.04 19.05 19.06
Service ← ↓	Access mask to assistance submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Hour counter Pump: Threshold 012x1000 Reset N° 000000	Sets the threshold for programmed maintenance on the evaporator pump.	35.01
Hour counter Pump 2: Threshold 012x1000 Reset N° 000000	Sets the threshold for programmed maintenance on pump 2. (this may be pump 2 of the evaporator or the pump on the secondary circuit in the water/water units or the recuperator pump, depending on unit configuration)	35.02

Mask	Description	Para n°
Hour counter Compressor 1: Threshold 010x1000 Reset N° 000000	Sets the threshold for programmed maintenance.	35.03 35.11 35.12
Hour counter Compressor 2: Threshold 010x1000 Reset N° 000000	Sets the threshold for programmed maintenance.	35.04 35.13 35.14
Hour counter Compressor 3: Threshold 010x1000 Reset N° 000000	Sets the threshold for programmed maintenance.	35.05 35.15 35.16
Hour counter Compressor 4: Threshold 010x1000 Reset N° 000000	Sets the threshold for programmed maintenance.	35.06 35.17 35.18
Priority in winter: N	Sets winter priority for recovery (only for heat pump units with recovery).	35.27
Enable remove control of recovery: N	Enables recovery control from a remote contact (requires expansion tank).	35.28
Insuff. evap. press: Enable N Start delay 300 s Full p. del. 030 s	Enables evaporation pressure control for activating the insufficient evaporation pressure alarm . Sets the alarm cut-in delay	35.53 35.54 35.55
Insuff. evap. press: Setpoint 03.4 bar Diff. 00.1 bar	Sets the setpoint and differential for activating the insufficient evaporation pressure alarm.	35.56 35.57
Evaporator antifreeze alarm: Setpoint 04.0 °C Diff. 04.0 °C	Sets the setpoint and differential for activating the evaporator anti-freeze alarm.	35.29 35.30
Evaporator antifreeze heating element: Setpoint 04.0 °C Diff. 04.0 °C	Sets the setpoint and differential for activating the evaporator anti-freeze heating element.	35.31 35.32
Condensor anti-freeze alarm: Setpoint 04.0 °C Diff. 04.0 °C	Sets the setpoint and differential for activating the condenser antifreeze alarm (only for water/water unit with freon reversal).	35.33 35.34
Recuperator anti- freeze heater: Setpoint 04.0 °C Diff. 04.0 °C	Sets the setpoint and differential for activating the recuperator anti-freeze heater.	35.35 35.36
Low water flow alarm: max. delta 08.0 °C delay 030 s	Sets the setpoint and delay for triggering the low water flow alarm.	35.37 35.38
High/Low inlet temp. to unit Type: signal Delay: 030 s	Chooses whether, with high/low inlet water temperature, the unit must continue to work (giving a signal) or stop the compressors to prevent them from suffering damage (automatic reset alarm). Sets the delay before activating the high inlet water temperature (summer mode) / low temperature inlet water (winter mode) alarm/signal.	35.39 35.40
High inlet temp. to unit signal: setpoint 30.0 °C	Sets the setpoint for activating the high inlet water temperature alarm/signal. (When operating in the chiller mode)	35.41
Low inlet temp. to unit signal: setpoint 15.0 °C	Sets the setpoint for activating the low inlet water temperature alarm/signal. (When operating in the chiller mode)	35.42
Pre-alarms Enable: N	Pre-alarm enable mask.	35.43
Antifreeze pre-alarm Offset 00.5 °C Diff. 03.0 °C	Mask for setting the offset (with respect to the antifreeze alarm) and differential of the antifreeze pre-alarm on the evaporator (only visible if pre-alarm management is enabled). The anti-freeze alarm setpoint and offset define signal activation, the differential defines deactivation.	35.44 35.45
Low pressure pre-alarm Offset 00.5 bar Diff. 00.5 bar	Mask for setting the offset (with respect to the low pressure alarm from transducer) and differential of the low pressure pre-alarm (only visible if pre-alarm management and low pressure transducers are enabled or, for heat pumps, the pressure transducers are enabled). The low pressure alarm setpoint and offset define signal activation, the differential defines deactivation.	35.46 35.47

Mask	Description	Para n°
High pressure pre-alarm Offset -03.5 bar Diff. 05.0 bar	Mask for setting the offset (with respect to the high pressure alarm from transducer) and differential of the high pressure pre-alarm (only visible if pre-alarm management and high pressure transducers are enabled). The anti-freeze alarm setpoint and offset define signal activation (negative offset), the differential defines deactivation (downwards with positive value).	35.48 35.49
W 3000 Cod. CA 15.00 GB 🔒🔒 Man. C0240011-06-07	This mask contains the reference information of the software [Code] and of the reference technical manual [Man.]. The closed padlock symbol shows that the board is provided with its propriety software; two padlocks appear on units with 3 or 4 circuits.	
Enter new service password 0000	Sets a new password. ATTENTION: THE PASSWORD ENTERED IN THIS FIELD IS THE ONLY ONE THAT ALLOWS ACCESS TO THE SERVICE MENU!!	
Ventil. ← ↓	Access mask to fan submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Condensation contr. Enable precond. Y Precond. time 10 s Precond. perc. 066 %	Enables pre-condensation (pre-ventilation), sets the duration and defines a value at which the fans (or condensation valve) run during this phase.	51.01 51.02 51.03
Condensation contr. Chiller step1 Setpoint 15.0 bar Diff. 3.0 bar	Sets step 1 in the chiller mode (only displayed if step condensation is set).	51.04 51.05
Condensation contr. Chiller step2 Setpoint 16.5 bar Diff. 3.0 bar	Sets step 2 in the chiller mode (only displayed if step condensation is set).	51.06 51.07
Condensation contr. Chiller step3 Setpoint 18.0 bar Diff. 3.0 bar	Sets step 3 in the chiller mode (only displayed if step condensation is set).	51.08 51.09
Condensation contr. Chiller step4 Setpoint 19.0 bar Diff. 2.0 bar	Sets step 4 in the chiller mode (only displayed if step condensation is set).	51.10 51.11
Evaporation contr. HeatPump step1 Setpoint 08.0 bar Diff. 1.0 bar	Sets step 1 in the heat pump mode (only displayed if step condensation is set).	51.12 51.13
Evaporation contr. HeatPump step2 Setpoint 05.0 bar Diff. 1.4 bar	Sets step 2 in the heat pump mode (only displayed if step condensation is set).	51.14 51.15
Evaporation contr. HeatPump step3 Setpoint 02.2 bar Diff. 0.8 bar	Sets step 3 in the heat pump mode (only displayed if step condensation is set).	51.16 51.17
Evaporation contr. HeatPump step4 Setpoint 01.0 bar Diff. 0.5 bar	Sets step 4 in the heat pump mode (only displayed if step condensation is set).	51.18 51.19
Circuits on with fan overheating N	Enables the circuits even if the fan overheating alarm has tripped.	51.20
Calibration ← ↓	Access mask to calibration submenu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Master calibration offset Value B1: 0.0bar 07.3bar B2: 0.0°C 12.3°C	Modifies the probe offsets. (Only present if required by the type of machine configured). The word "master" only appears on units with more than 2 circuits.	27.01 27.02
Master calibration offset Value B3: 0.0°C 12.3°C B4: 0.0°C 12.3°C	Modifies the probe offsets. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.03 27.04
Master calibration offset Value B5: 0.0°C 12.3°C B6: 0.0°C 07.3bar	Modifies the probe offsets. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.05 27.06
Master calibration offset Value B7: 0.0°C 05.3°C B8: - -	Modifies the probe offsets. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.07 27.08

Mask	Description	Para n°
Master calibration offset Value B9: 0.0°C 00.0°C B10: - -	Modifies the probe offsets. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.09 27.10
Master calibr. exp1 offset Value B1: 0.0°C 35.6°C B2: 0.0°C 40.5°C	Modifies the probe offsets of expansion 1. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.11 27.12
Master calibr. exp1 offset Value B3: 0.0°C 37.2°C B4: 0.0°C 37.2°C	Modifies the probe offsets of expansion 1. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.13 27.14
Master calibr. exp2 offset Value B1: 0.0bar 04.2bar B2: 0.0bar 03.9bar	Modifies the probe offsets of expansion 2. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.21 27.22
Master calibr. exp2 offset Value B3: 0.0°C 35.6°C B4: 0.0°C 40.5°C	Modifies the probe offsets of expansion 2. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.23 27.24
Master calibr. exp2 offset Value B5: 0.0°C 22.3°C B6: 0.0°C 24.2°C	Modifies the probe offsets of expansion 2. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.25 27.26
Master calibr. exp2 offset Value B7: 0.0°C 22.4°C B8: - -	Modifies the probe offsets of expansion 2. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.27 27.28
Master calibr. exp3 offset Value B1: 0.0°C 05.3°C B2: 0.0°C 00.0°C	Modifies the probe offsets of expansion 3. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.31 27.32
Master calibr. exp3 offset Value B3: 0.0°C 00.0°C B4: 0.0°C 00.0°C	Modifies the probe offsets of expansion 3. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.33 27.34
Master calibr. exp5 offset Value B1: 0.0°C 00.0°C B2: 0.0°C 00.0°C	Modifies the probe offsets of expansion 5. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.51 27.52
Master calibr. exp5 offset Value B3: 0.0°C 00.0°C B4: 0.0°C 00.0°C	Modifies the probe offsets of expansion 5. (Only present if required by the type of machine configured) The word "master" only appears on units with more than 2 circuits.	27.53 27.54
Slave calibration offset Value B1: 0.0bar 07.3bar B2: 0.0°C 12.3°C	Modifies the probe offsets. (Only present if required by the type of machine configured).	31.01 31.02
Slave calibration offset Value B3: 0.0°C 12.3°C B4: 0.0°C 12.3°C	Modifies the probe offsets. (Only present if required by the type of machine configured)	31.03 31.04
Slave calibration offset Value B5: 0.0°C 12.3°C B6: 0.0°C 07.3bar	Modifies the probe offsets. (Only present if required by the type of machine configured)	31.05 31.06
Slave calibration offset Value B7: 0.0°C 05.3°C B8: - -	Modifies the probe offsets. (Only present if required by the type of machine configured)	31.07 31.08
Slave calibration offset Value B9: 0.0°C 00.0°C B10: - -	Modifies the probe offsets. (Only present if required by the type of machine configured)	31.09 31.10
Slave calibr. exp1 offset Value B1: 0.0°C 35.6°C B2: 0.0°C 40.5°C	Modifies the probe offsets of expansion 1. (Only present if required by the type of machine configured)	31.11 31.12
Slave calibr. exp1 offset Value B3: 0.0°C 37.2°C B4: 0.0°C 37.2°C	Modifies the probe offsets of expansion 1. (Only present if required by the type of machine configured)	31.13 31.14
Slave calibr. exp2 offset Value B1: 0.0bar 04.2bar B2: 0.0bar 03.9bar	Modifies the probe offsets of expansion 2. (Only present if required by the type of machine configured)	31.21 31.22
Slave calibr. exp2 offset Value B3: 0.0°C 35.6°C B4: 0.0°C 40.5°C	Modifies the probe offsets of expansion 2. (Only present if required by the type of machine configured)	31.23 31.24

Mask	Description	Para n°
Slave calibr. exp2 offset Value B5: 0.0°C 22.3°C B6: 0.0°C 24.2°C	Modifies the probe offsets of expansion 2. (Only present if required by the type of machine configured)	31.25 31.26
Slave calibr. exp2 offset Value B7: 0.0°C 22.4°C B8: - -	Modifies the probe offsets of expansion 2. (Only present if required by the type of machine configured)	31.27 31.28
Slave calibr. exp3 offset Value B1: 0.0°C 05.3°C B2: 0.0°C 00.0°C	Modifies the probe offsets of expansion 3. (Only present if required by the type of machine configured)	31.31 31.32
Slave calibr. exp3 offset Value B3: 0.0°C 00.0°C B4: 0.0°C 00.0°C	Modifies the probe offsets of expansion 3. (Only present if required by the type of machine configured)	31.33 31.34
Slave calibr. exp5 offset Value B1: 0.0°C 00.0°C B2: 0.0°C 00.0°C	Modifies the probe offsets of expansion 5. (Only present if required by the type of machine configured)	31.51 31.52
Slave calibr. exp5 offset Value B3: 0.0°C 00.0°C B4: 0.0°C 00.0°C	Modifies the probe offsets of expansion 5. (Only present if required by the type of machine configured)	31.53 31.54
User Password: 0000	Access mask to user menu. Enter the user password for access.	
User ← ↓	Access mask to user menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Step adjustment type IN INLET	Chooses between proportional step adjustment, Quick Mind adjustment and modulating adjustment for screw compressors. Also defines on which temperature probe the adjustment is made. If the unit has more than one evaporator or step adjustment is set, adjustment can only be made on the inlet probe.	39.01 39.01 39.02
Time bands enable: Disabled	Activates/deactivates time bands. The time bands cannot be activated if the external setpoint is enabled.	39.41
Serial line configuration: Disabled	Allows the devices connected to the serial interface board to be enabled and selected ("0"=disabled, "1"= supervision, "2"= sequencer, "3"=Manager 3000). N.B.: the Service software does not need to be enabled.	39.42
En. from superv.: On/Off: N Operating mode: N	Allows the on/off status of the unit to be selected from a supervision system. Also performs operating mode switching (to modify the latter, the unit must be switched off).	39.43 39.44
Superv. setting Modbus protocol Speed 9600 baud ID 011	Defines the connection parameters with the supervisor: protocol type, communication speed and unit identification number.	39.45 39.46 39.47
Select language: English Select language	Selects the required language; “Select language” flashes on the last line in all the available languages. Once a language has been selected, the programme automatically switches to the first mask of the display menu. N.B.: Up to three languages are present on the board: Italian, English and another language.	39.48
W 3000 Code CA 15.00 GB 🔒🔒 Man. C0240001-06-07	This mask contains the reference information of the software [Code] and of the reference technical manual [Man.]. The closed padlock symbol shows that the board is provided with its propriety software; two padlocks appear on units with 3 or 4 circuits	
Enter another user password 0000	Personalises the password by defining one that will replace the default password.	
Unit ← ↓	Access mask to unit menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Temp. In. Out. Evap. 12.5 07.0°C Rec. 35.6 40.5°C Cond. 38.0 42.5°C	Displays inlet and outlet temperatures of the evaporator, recuperator and condenser (where fitted).	
Temp. In. Out. Evap. 12.5 07.0°C Evap1 07.2°C Evap2 06.9°C	(if 2 evaporators are fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the two evaporators.	

Mask	Description	Para n°
Temp. In. Out. Cond. 24.3 22.4°C Cond.1 22.3°C Cond.2 22.4°C	(if 2 condensers are fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the two condensers.	
Temp. Freecooling 12.3°C External air 15.4°C Optional 19.6°C	(for water-air units) Displays freecooling temperature (in chiller+freecooling units), external air temperature and optional temperature (if the probes are enabled).	
Circ1 Circ2 hp 07.3 07.3bar lp 04.2 03.9bar st Off Off	Displays high and low pressure values (if transducers are fitted) and codifies the operating mode of circuits 1 and 2. (see table at end of manual)	
Circ3 Circ4 hp 07.3 07.3bar lp 04.2 03.9bar st Off Off	Displays high and low pressure values (if transducers are fitted) and codifies the operating mode of circuits 3 and 4. (see table at end of manual)	
Circ1 Circ2 tc 07.3 07.3 °C tl 00.0 00.0 °C sub 00.0 00.0 °C	(in chiller units with recovery) Displays pressure converted into temperature values, temperature of the liquid and calculated subcooling values of circuits 1 and 2.	
Circ3 Circ4 tc 07.3 07.3 °C tl 00.0 00.0 °C sub 00.0 00.0 °C	(in chiller units with recovery) Displays pressure converted into temperature values, temperature of the liquid and calculated subcooling values of circuits 3 and 4.	
Timer tuning defrost Range 1200 - 03600 s Free Defrost 0370 s	Displays, for timer tuning defrost, the variation range in the defrost delay calculated according to external temperature. Also displays the maximum duration of the free defrost calculated according to external temperature.	
Circ1 Circ2 Time 02700 02700 s Timer tuning defrost	Displays the defrost delay calculated by the timer tuning defrost algorithm.	
Circ3 Circ4 Time 02700 02700 s Timer tuning defrost	Displays the defrost delay calculated by the timer tuning defrost algorithm.	
Circ1 Circ2 Time 0188 0125 s Max 0290 0270 s Free Defrost	Displays the free defrost enable time and the maximum time calculated according to the length of the delay.	
Circ3 Circ4 Time 0188 0125 s Max 0290 0270 s Free Defrost	Displays the free defrost enable time and the maximum time calculated according to the length of the delay.	
Circ1 Circ2 defr N N T.del 0904 0000 s T.dur 0000 0028 s	Displays the defrosting status of circuits 1 and 2, the delay before defrosting starts and the time taken to defrost.	
Circ3 Circ4 defr N N T.del 0904 0000 s T.dur 0000 0028 s	Displays the defrosting status of circuits 3 and 4, the delay before defrosting starts and the time taken to defrost.	
Discharge temp. Comp.1 105.3°C Comp.2 098.4°C	Displays the discharge temperature (if probes are present) of compressors 1 and 2.	
Discharge temp. Comp.3 105.3°C Comp.4 098.4°C	Displays the discharge temperature (if probes are present) of compressors 3 and 4.	
Analogue outputs: Cond. 1 adj.:000 % Cond. 2 adj.:000 %	Displays analogue outputs 1 and 2. Shows the percentage of demand of the devices connected to it (for non-linear devices correspondence with supplied voltage V does not apply). Compares Cond.1-2 adj. with single or dual ventilation adjustment.	
Analogue outputs: Cond. 3 adj.:000 % Cond. 4 adj.:000 %	Displays analogue outputs 3 and 4.	
Analogue outputs: --- % --- %	Displays analogue outputs 5 and 6.	
Analogue outputs: 3 Freecooling :000 % --- %	Displays analogue outputs 1 and 2 of expansion 3.	

Mask	Description	Para n°
Analogue outputs: Cond. 3 adj.:000 % Cond. 4 adj.:000 %	Displays analogue outputs 1 and 2 of the slave board. Shows the percentage of demand of the devices connected to it (for non-linear devices correspondence with supplied voltage V does not apply). Compares Cond. 3-4 adj. with single or dual ventilation adjustment.	
Analogue outputs: --- % --- %	Displays analogue outputs 3 and 4 of the slave.	
Analogue outputs: --- % --- %	Displays analogue outputs 5 and 6 of the slave.	
Analogue outputs: 3 Freecooling :000 %	Displays analogue outputs 1 and 2 of slave expansion 3.	
Hour counter Pump 1 000000 Pump 2 000000	Displays the operating hours of the circulation pump (pump 2 appears only if two pumps are enabled).	
Compr. hour counter Av. hrs 000000 C1 000000 C2 000000 C3 000000 C4 000000	Displays average compressor hours. Displays the operating hours of compressors 1, 2, 3 and 4.	
Comp.1 Work Req 078 << 082 Act 082% 32450rpm CR 02.82	Displays the operating status of the centrifuge compressors, the request and effective activation, the rpm and the percentage delivered.	
outlet temp 78.5°C lp 03.9bar	Displays other data relative to the centrifuge compressors, such as outlet temperature and inlet pressure	
Comp.2 Work Req 075 << 080 Act 080% 29500rpm CR 02.84	Displays the operating status of the centrifuge compressors, the request and effective activation, the rpm and the percentage delivered.	
outlet temp 78.5°C lp 03.9bar	Displays other data relative to the centrifuge compressors, such as outlet temperature and inlet pressure	
Comp.3 Work Req 076 << 082 Act 082% 33600rpm CR 02.86	Displays the operating status of the centrifuge compressors, the request and effective activation, the rpm and the percentage delivered.	
outlet temp 78.5°C lp 03.9bar	Displays other data relative to the centrifuge compressors, such as outlet temperature and inlet pressure	
Comp.4 Work Req 078 << 081 Act 081% 30250rpm CR 02.83	Displays the operating status of the centrifuge compressors, the request and effective activation, the rpm and the percentage delivered.	
outlet temp 78.5°C lp 03.9bar	Displays other data relative to the centrifuge compressors, such as outlet temperature and inlet pressure	
subc 03.8°C 03.6°C st Off Off step 0000 0000	Displays the subcooling value of circuits, the status of the electronic thermostat valve drivers and the number of valve aperture steps	
Enable circuits Circ1: Y Circ2: Y Circ3: N Circ4: N	Selects/deselects circuits.	47.01 47.02 47.03 47.04
Enable compressors C1:Y C2:Y C3:Y C4:Y	Selects/deselects compressors.	47.05 47.06 47.07 47.08
W 3000 Code CA 15.00 GB 🔒🔒	This mask contains the reference information of the software [Code]. The closed padlock symbol shows that the board is provided with its propriety software; two padlocks appear on units with 3 or 4 circuits	
Setpoint ← ↓	Access mask to setpoint menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	

Mask	Description	Para n°
Unit type: chiller Operating mode: chiller	Mask for displaying the unit type and setting the operating mode.	43.01
Setpoint active: Principal 07.0 °C Recovery 42.5 °C	Displays the current setpoint. If the letter R appears in the top right-hand corner, the active setpoint is the secondary one.	
Chiller setpoint 07.0 °C Heatpump setpoint 42.5 °C	Sets the chiller and heat pump setpoint for inlet adjustment.	43.02 43.03 43.04
Chiller setpoint 11.0 °C Heatpump setpoint 45.0 °C	Sets the chiller and heat pump setpoint for outlet adjustment.	43.05 43.06
Dual setpoint chiller 07.0 °C Dual setpoint heatpump 45.0 °C	Mask for setting the second setpoint (only visible if the dual setpoint function is enabled P39.23).	43.07 43.08
Recovery Setpoint 42.5 °C	Sets the recovery setpoint (only displayed if recovery is enabled).	43.09
In/Out ← ↓	Access mask to In/Out menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Dig.In. master 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs and specifies their state. C: Contact closed A: Contact open The number of inputs displayed depends on the type of unit. (the figures on the second row are for reference purposes) Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs and specifies their state. C: Contact closed A: Contact open The number of outputs displayed depends on the type of unit. (the figures on the second row are for reference purposes) Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 1 07.3 bar 2 12.3 °C	Display of analogue inputs 1 and 2. Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 3 12.3 °C 4 12.3 °C	Display of analogue inputs 3 and 4. Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 5 12.3 °C 6 07.3 bar	Display of analogue inputs 5 and 6. Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 7 05.3 °C 8 00.0	Display of analogue inputs 7 and 8. Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 9 00.0 °C 10 A	Display of analogue inputs 9 and 10. Master is only specified on units with 3 or 4 circuits.	
An. Out. master N° Value 1 00.0 V 2 00.0 V	Voltage applied to analogue outputs 1 and 2. Master is only specified on units with 3 or 4 circuits.	
An. Out. master N° Value 3 00.0 V 4 00.0 V	Voltage applied to analogue outputs 3 and 4. Master is only specified on units with 3 or 4 circuits.	
An. Out. master N° Value 5 00.0 V 6 00.0 V	Voltage applied to analogue outputs 5 and 6. Master is only specified on units with 3 or 4 circuits.	
Masters required Exp.1: Y Exp.2: N Exp.3: Y Exp.4: N Exp.5: N	Mask indicating the address for the expansion boards. This changes depending on the parameter settings. Master is only specified on units with 3 or 4 circuits.	

Mask	Description	Para n°
Masters on-line Exp.1: Y Exp.2: N Exp.3: Y Exp.4: N Exp.5: N	Mask for checking connection with the expansion boards. N means that there is no link with the expansion indicated in the address. Master is only specified on units with 3 or 4 circuits.	
Dig.In. master exp1 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 1 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master exp1 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 1 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp1 N° Value 1 35.6 °C 2 40.5 °C	Displays analogue inputs 1 and 2 of expansion 1 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp1 N° Value 3 37.2 °C 4 37.2 °C	Displays analogue inputs 3 and 4 of expansion 1 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. master exp2 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 2 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master exp2 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 2 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp2 N° Value 1 04.2 bar 2 03.9 bar	Displays analogue inputs 1 and 2 of expansion 2 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp2 N° Value 3 35.6 °C 4 40.5 °C	Displays analogue inputs 3 and 4 of expansion 2 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp2 N° Value 5 22.3 °C 6 24.2 °C	Displays analogue inputs 5 and 6 of expansion 2 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp2 N° Value 7 22.4 °C 8 - °C	Displays analogue inputs 7 and 8 of expansion 2 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. master exp3 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 3 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master exp3 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 3 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp3 N° Value 1 06.0 °C 2 00.0 °C	Displays analogue inputs 1 and 2 of expansion 3 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp3 N° Value 3 00.0 °C 4 00.0 °C	Displays analogue inputs 3 and 4 of expansion 3 (if present). Master is only specified on units with 3 or 4 circuits.	
An. Out. master exp3 N° Value 1 00.0 V	Voltage applied to analogue output 1 of expansion 3 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. master exp4 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 4 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master exp4 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 4 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp4 N° Value 1 A 2 A	Displays analogue inputs 1 and 2 of expansion 4 (if present). Master is only specified on units with 3 or 4 circuits.	

Mask	Description	Para n°
An. In. master exp4 N° Value 3 A 4 A	Displays analogue inputs 3 and 4 of expansion 4 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. master exp5 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 5 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master exp5 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 5 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp5 N° Value 1 00.0 °C 2 00.0 °C	Displays analogue inputs 1 and 2 of expansion 5 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp5 N° Value 3 00.0 °C 4 00.0 °C	Displays analogue inputs 3 and 4 of expansion 5 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. slave 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs and specifies their state. C: Contact closed A: Contact open The number of inputs displayed depends on the type of unit. (the figures on the second row are for reference purposes)	
Dig.Out. slave 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs and specifies their state. C: Contact closed A: Contact open The number of outputs displayed depends on the type of unit. (the figures on the second row are for reference purposes)	
An. In. slave N° Value 1 07.3 bar 2 12.3 °C	Display of analogue inputs 1 and 2.	
An. In. slave N° Value 3 12.3 °C 4 12.3 °C	Display of analogue inputs 3 and 4.	
An. In. slave N° Value 5 12.3 °C 6 07.3 bar	Display of analogue inputs 5 and 6.	
An. In. slave N° Value 7 05.3 °C 8 00.0	Display of analogue inputs 7 and 8.	
An. In. slave N° Value 9 00.0 °C 10 A	Display of analogue inputs 9 and 10.	
An. Out. slave N° Value 1 00.0 V 2 00.0 V	Voltage applied to analogue outputs 1 and 2.	
An. Out. slave N° Value 3 00.0 V 4 00.0 V	Voltage applied to analogue outputs 3 and 4.	
An. Out. slave N° Value 5 00.0 V 6 00.0 V	Voltage applied to analogue outputs 5 and 6.	
Slaves required Exp.1: Y Exp.2: N Exp.3: Y Exp.4: N Exp.5: N	Mask indicating the address for the slave expansion boards. This changes depending on the parameter settings. Master is only specified on units with 3 or 4 circuits.	
Slaves on-line Exp.1: Y Exp.2: N Exp.3: Y Exp.4: N Exp.5: N	Mask for checking connection with the slave expansion boards. N means that there is no link with the expansion indicated in the address. Master is only specified on units with 3 or 4 circuits.	
Dig.In. slave exp1 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 1 (if present) and specifies their state. C: Contact closed A: Contact open	
Dig.Out. slave exp1 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 1 (if present) and specifies their state. C: Contact closed A: Contact open	

Mask	Description	Para n°
An. In. slave exp1 N° Value 1 35.6 °C 2 40.5 °C	Displays analogue inputs 1 and 2 of expansion 1 (if present).	
An. In. slave exp1 N° Value 3 37.2 °C 4 37.2 °C	Displays analogue inputs 3 and 4 of expansion 1 (if present).	
Dig.In. slave exp2 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 2 (if present) and specifies their state. C: Contact closed A: Contact open	
Dig.Out. slave exp2 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 2 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp2 N° Value 1 04.2 bar 2 03.9 bar	Displays analogue inputs 1 and 2 of expansion 2 (if present).	
An. In. slave exp2 N° Value 3 35.6 °C 4 40.5 °C	Displays analogue inputs 3 and 4 of expansion 2 (if present).	
An. In. slave exp2 N° Value 5 22.3 °C 6 24.2 °C	Displays analogue inputs 5 and 6 of expansion 2 (if present).	
An. In. slave exp2 N° Value 7 22.4 °C 8 - °C	Displays analogue inputs 7 and 8 of expansion 2 (if present).	
Dig.In. slave exp3 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 3 (if present) and specifies their state. C: Contact closed A: Contact open	
Dig.Out. slave exp3 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 3 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp3 N° Value 1 06.0 °C 2 00.0 °C	Displays analogue inputs 1 and 2 of expansion 3 (if present).	
An. In. slave exp3 N° Value 3 00.0 °C 4 00.0 °C	Displays analogue inputs 3 and 4 of expansion 3 (if present).	
An. Out. slave exp3 N° Value 1 00.0 V	Voltage applied to analogue output 1 of expansion 3 (if present).	
Dig.In. slave exp4 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 4 (if present) and specifies their state. C: Contact closed A: Contact open	
Dig.Out. slave exp4 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 4 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp4 N° Value 1 A 2 A	Displays analogue inputs 1 and 2 of expansion 4 (if present).	
An. In. slave exp4 N° Value 3 A 4 A	Displays analogue inputs 3 and 4 of expansion 4 (if present).	
Dig.In. slave exp5 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 5 (if present) and specifies their state. C: Contact closed A: Contact open	
Dig.Out. slave exp5 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 5 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp5 N° Value 1 00.0 °C 2 00.0 °C	Displays analogue inputs 1 and 2 of expansion 5 (if present).	

Mask	Description	Para n°
An. In. slave exp5 N° Value 3 00.0 °C 4 00.0 °C	Displays analogue inputs 3 and 4 of expansion 5 (if present).	
Clock ← ↓	Access mask to clock menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Clock card not installed	Mask showing that the clock board is missing or damaged.	
Clock configuration: Date Time 01/01/04 08:00	Current date and time settings.	
Time bands not enabled. See user menu	Indicates that the time bands are set correctly but not enabled. To enable them, consult the user menu.	
Daily time band programming: advanced	Advanced time band programming manages four different daily time bands, type A and type B; each type can be personalised and each is independent from the other. Only the A-type time band is used in the standard programming mode.	900.01
Weekly timetable Monday type A Tuesday type A Wednesday type A	Weekly timetable setting.	900.02 900.03 900.04
Weekly timetable Thursday type A Friday type A Saturday disabled	Weekly timetable setting.	900.05 900.06 900.07
Weekly timetable Sunday disabled	Weekly timetable setting.	900.08
Time band 1A Off Time 00:00 / 07:00 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, first daily time band.	901.01 901.02 901.03 901.04 901.05 901.06
Time band 2A Adj. Time 07:00 / 12:00 Sp S 07.0°C W 45.0°C Sp R 45.0°C	Setting band A, second daily time band.	901.07 901.08 901.09 901.10 901.11 901.12
Time band 3A Off Time 12:00 / 13:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, third daily time band.	901.13 901.14 901.15 901.16 901.17 901.18
Time band 4A Adj. Time 13:30 / 19:30 Sp S 07.0°C W 45.0°C Sp R 45.0°C	Setting band A, fourth daily time band.	901.19 901.20 901.21 901.22 901.23 901.24
Time band 5A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, fifth daily time band.	901.25 901.26 901.27 901.28 901.29 901.30
Time band 6A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, sixth daily time band.	901.31 901.32 901.33 901.34 901.35 901.36

Mask	Description	Para n°
Time band 7A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, seventh daily time band.	901.37 901.38 901.39 901.40 901.41 901.42
Time band 8A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, eighth daily time band.	901.43 901.44 901.45 901.46 901.47 901.48
Time band 9A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, ninth daily time band.	901.49 901.50 901.51 901.52 901.53 901.54
Time band 10A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, tenth daily time band.	901.55 901.56 901.57 901.58
Time band 1B Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, first daily time band.	902.01 902.02 902.03 902.04 902.05 902.06
Time band 2B Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, second daily time band.	902.07 902.08 902.09 902.10 902.11 902.12
Time band 3B Adj. Time 06:30 / 19:30 Sp S 07.0°C W 45.0°C Sp R 45.0°C	Setting band B, third daily time band.	902.13 902.14 902.15 902.16 902.17 902.18
Time band 4B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, fourth daily time band.	902.19 902.20 902.21 902.22 902.23 902.24
Time band 5B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, fifth daily time band.	902.25 902.26 902.27 902.28 902.29 902.30
Time band 6B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, sixth daily time band.	902.31 902.32 902.33 902.34 902.35 902.36
Time band 7B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, seventh daily time band.	902.37 902.38 902.39 902.40 902.41 902.42
Time band 8B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, eighth daily time band.	902.43 902.44 902.45 902.46 902.47 902.48

Mask	Description	Para n°
Time band 9B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, ninth daily time band.	902.49 902.50 902.51 902.52 902.53 902.54
Time band 10B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, tenth daily time band.	902.55 902.56 902.57 902.58
Time band 1C Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, first daily time band.	903.01 903.02 903.03 903.04 903.05 903.06
Time band 2C Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, second daily time band.	903.07 903.08 903.09 903.10 903.11 903.12
Time band 3C Adj. Time 06:30 / 19:30 Sp S 07.0°C W 45.0°C Sp R 45.0°C	Setting band C, third daily time band.	903.13 903.14 903.15 903.16 903.17 903.18
Time band 4C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, fourth daily time band.	903.19 903.20 903.21 903.22 903.23 903.24
Time band 5C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, fifth daily time band.	903.25 903.26 903.27 903.28 903.29 903.30
Time band 6C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, sixth daily time band.	903.31 903.32 903.33 903.34 903.35 903.36
Time band 7C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, seventh daily time band.	903.37 903.38 903.39 903.40 903.41 903.42
Time band 8C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, eighth daily time band.	903.43 903.44 903.45 903.46 903.47 903.48
Time band 9C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, ninth daily time band.	903.49 903.50 903.51 903.52 903.53 903.54
Time band 10C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, tenth daily time band.	903.55 903.56 903.57 903.58
Time band 1D Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, first daily time band.	904.01 904.02 904.03 904.04 904.05 904.06

Mask	Description	Para n°
Time band 2D Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, second daily time band.	904.07 904.08 904.09 904.10 904.11 904.12
Time band 3D Adj. Time 06:30 / 19:30 Sp S 07.0°C W 45.0°C Sp R 45.0°C	Setting band D, third daily time band.	904.13 904.14 904.15 904.16 904.17 904.18
Time band 4D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, fourth daily time band.	904.19 904.20 904.21 904.22 904.23 904.24
Time band 5D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, fifth daily time band.	904.25 904.26 904.27 904.28 904.29 904.30
Time band 6D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, sixth daily time band.	904.31 904.32 904.33 904.34 904.35 904.36
Time band 7D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, seventh daily time band.	904.37 904.38 904.39 904.40 904.41 904.42
Time band 8D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, eighth daily time band.	904.43 904.44 904.45 904.46 904.47 904.48
Time band 9D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, ninth daily time band.	904.49 904.50 904.51 904.52 904.53 904.54
Time band 10D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, tenth daily time band.	904.55 904.56 904.57 904.58
Log ← ↓	Access mask to Alarms Log menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
10:36:04 20/12/06 Event N°001 A002 Y Phase sequence	Access mask to alarms log (only visible if the clock card is installed). Each alarm registered contains the following details: date and time, alarm or report code, activation or deactivation event (S = set, R = reset), event number, alarm description.	

4 TABLE OF MASKS W3000 base

Mask	Description	Para n°
level1 | level2 | level3		
OFF	Main display mask. Indicates the state of the unit ("ON", "OFF").	
MODE	The submask displays the operating mode of the unit	
CH	"CH"=Chiller, "HP"= Heat Pump	
St	The submask displays the operating status of the unit	
On H	"ON K"= on from keypad, "ON D"= on from digital input, "ON B"= on from time bands, "ON S"= on from supervisor, "OFFA"= off from alarm, "OFFS"= off from supervisor, "OFFB"= off from time bands, "OFFD"= off from digital input, "OFFK"= off from keypad, "OFF"= off	
rEQ	The submask displays the percentage of power requested by the thermoregulator	
50	value ranging from 0 to 100	
ACt	The submask displays the percentage of power delivered by the thermoregulator	
50	value ranging from 0 to 100	
PUMP	The submask displays the time remaining before the pump is switched on/off.	
60	If the time decreases the unit is in the switching on/off phase. The time is expressed in seconds.	
EUIn	The submask displays the inlet temperature of the evaporator	
12.5	temperature expressed in degrees centigrade	
EUO1	The submask displays the outlet temperature of evaporator 1	
07.2	temperature expressed in degrees centigrade	
EUO2	(If 2 evaporators are present). The submask displays the outlet temperature of evaporator 2	
06.9	temperature expressed in degrees centigrade	
CdIn	The submask displays the inlet temperature of the condenser (only for water/water units if the condenser inlet probe is enabled)	
24.3	temperature expressed in degrees centigrade	
CdO1	The submask displays the outlet temperature of condenser n° 1 (only for water/water units if the condenser outlet probe is enabled)	
CdO2	(If 2 condensers are present). The submask displays the outlet temperature of condenser n° 2 (only for water/water units if the condenser outlet probe is enabled)	
22.4	temperature expressed in degrees centigrade	
EHt	(In water/air units, if the external air temperature probe is enabled). Displays external temperature	
15.6	temperature expressed in degrees centigrade	
OPt	(In water-air units, if the operational temperature probe is enabled). Displays optional temperature	
18.8	temperature expressed in degrees centigrade	
Mnt	Service menu	
PrOP	(Enable the "step adjustment" parameter first). The submask is used to set step adjustment.	
P	"P"=proportional adjustment, "P+I"=proportional + integral adjustment	55.01
LL S	The submask is used to set the lower limit of the chiller setpoint with inlet adjustment	
0	expressed in degrees centigrade	55.04 55.05
HL S	The submask is used to set the upper limit of the chiller setpoint with inlet adjustment	
0	expressed in degrees centigrade	55.06
LL S	The submask is used to set the lower limit of the chiller setpoint with outlet adjustment	
0	expressed in degrees centigrade	55.07
HL S	The submask is used to set the upper limit of the chiller setpoint with outlet adjustment	
0	expressed in degrees centigrade	55.08
LL U	The submask is used to set the lower limit of the heat pump setpoint with inlet adjustment	
0	expressed in degrees centigrade	55.09
HL U	The submask is used to set the upper limit of the heat pump setpoint with inlet adjustment	
0	expressed in degrees centigrade	55.10
LL U	The submask is used to set the lower limit of the heat pump setpoint with outlet adjustment	
0	expressed in degrees centigrade	55.11
HL U	The submask is used to set the upper limit of the heat pump setpoint with outlet adjustment	
0	expressed in degrees centigrade	55.12
OFFS	(Only in the quick mind adjustment mode). The submask is used to set the forced shutdown temperature in the chiller mode	
4.5	expressed in degrees centigrade	55.15
OFFU	(Only in the quick mind adjustment mode). The submask is used to set the forced shutdown temperature in the heat pump mode	
51.0	expressed in degrees centigrade	55.16
bAnd	(Only visible in the step adjustment mode). The submask is used to set the temperature adjustment band	

Mask	Description	Para n°
0	expressed in degrees centigrade	55.17
SEtU	The submask is used to enable setpoint variation	
n	"N"= disabled, "Y"= enabled	55.20
SEtt	The submask is used to set the setpoint variation signal type.	
4 20	"4-20"= 4-20 mA	55.21
SEtL	The submask is used to set the minimum variation, corresponding to the minimum signal	
0	expressed in degrees centigrade	55.22
SEtH	The submask is used to set the maximum variation, corresponding to the maximum signal	
6.0	expressed in degrees centigrade	55.23
P Pr	(if 2 pumps are present on the evaporator). The submask is used to set the pump control type.	
AUtO	"AUTO"= automatic, "PMP1"= pump 1 only, "PMP2"= pump 2 only	55.28
P On	The submask is used to set the minimum pump operation time when the unit is switched on	
60	time expressed in seconds	55.29
P OF	The submask is used to set the minimum pump switch-off time when the unit is switched off	
60	time expressed in seconds	55.30
PUrL	The submask is used to enable demand limit	
n	"N"=disabled, "Y"=enabled	55.31
22.3	temperature expressed in degrees centigrade	
50	value expressed in percent	55.32
PUrU	(If the "demand limit" parameter is enabled"). The submask is used to set the power limitation percentage in the heat pump mode	
0	value expressed in percent	55.33
dI 0	The submask is used to set the digital input for switching on/off the unit	
n	"N"= disabled, "Y"= enabled	55.35
dI 5	(Only if the "operating mode" parameter is set on the heat pump). The submask is used to enable the digital input for the chiller/heat pump modes	
n	"N"= disabled, "Y"= enabled	55.36
SAL1	Evaporator antifreeze alarm setpoint	
04.0	temperature expressed in degrees centigrade	35.29
dAL1	Evaporator antifreeze alarm differential	
04.0	temperature expressed in degrees centigrade	35.30
Sr 1	Evaporator antifreeze heating element setpoint	
04.0	temperature expressed in degrees centigrade	35.31
dr 1	Evaporator antifreeze heating element differential	
04.0	temperature expressed in degrees centigrade	35.32
PASS	The submask is used to set the Service Password	
0	from 0 to 9999	
USEr	User menu	
rEG	The submask is used to set the adjustment type.	
StEP	(Switch off the unit before changing this setting!!!). "STEP"= steps, "QM"= quick mind	39.01
FLOU	The submask is used to set the adjustment flow type.	
In	"IN"= inlet flow, "OUT"= outlet type	39.02
bAnd	The submask can be used to enable time bands	
n	"N"= disabled, "Y"= enabled	39.41
SEr	The submask is used to enable the supervisor	
n	"N"= disabled, "SPV"= Supervision, "SQ"= Sequencer, "EDI"= Manager 3000	39.42
PrOt	(If the "supervisor" is enabled). The submask is used to set the communication protocol.	
nOdb	"MODB"= modbus, "LON"= lonWorks, "STD"=standard Carel	39.45
bAUd	(If the "supervisor" is enabled). The submask is used to set the speed of communication expressed in bauds	
1200	Possible values: "1200"-"2400"-"9600"-"19,2"=19200	39.46
Id	(If the "supervisor" is enabled). The submask is used to set the identification n° for communicating in the supervisor network	
0	address	39.47
SU 0	(If the "supervisor" is enabled). The submask is used to set on/off from the supervisor	
n	"N"= disabled, "Y"= enabled	39.43
SU n	(If the "supervisor" is enabled). The submask is used to enable the operating mode as supervisor	
n	"N"= disabled, "Y"= enabled	39.44
PASS	The submask is used to set the user Password	
0	from 0 to 9999	
CLH	Clock menu, not available on this keypad	
nOnE		
I/O	Input/output menu	
dI A	Displays digital input 1:4	
CCCC	C=closed,A=open. XXXX=[input1][input2][input3][input4]	
dI b	Displays digital input 5:8	

Mask	Description	Para n°
CCCC	C=closed,A=open. XXXX=[input5][input6][input7][input8]	
dI C	Displays digital input 09:12:00	
CCCC	C=closed,A=open. XXXX=[input9][input10][input11][input12]	
dI d	Displays digital input 13:15	
CCC	C=closed,A=open. XXX-=[input13][input14][input15]	
dO A	Displays digital output 1:4	
CAAA	C=closed,A=open. XXXX=[output1][output2][output3][output4]	
dO B	Displays digital output 5:8	
CAAA	C=closed,A=open. XXXX=[output5][output6][output7][output8]	
dO C	Displays digital output 9:12	
AAAA	C=closed,A=open. XXXX=[output9][output10][output11][output12]	
AI 1	Displays analogue input 1	
18.1	value	
AI 2	Displays analogue input 2	
17.9	value	
AI 3	Displays analogue input 3	
25.3	value	
AI 4	Displays analogue input 4	
30.2	value	
AI 5	Displays analogue input 5	
24.5	value	
AI 6	Displays analogue input 6	
24.5	value	
AI 7	Displays analogue input 7	
0	value	
AI 8	Displays analogue input 8	
0	value	
AO 3	Displays analogue output 3	
70	value expressed in Volts	
AO 4	Displays analogue output 4	
80	value expressed in Volts	
SEtP	Setpoint menu	
nOdE	The submask is used to set the operating mode (this depends on the machine type set in the manufacturer menu using the W3000-compact keypad)	
CH	"CH"= Chiller, "HP"= heat pump	43.01
ACt	The submask displays the percentage of active power of the thermoregulator	
50	value ranging from 0 to 100	
SUn	(If the FLOW parameter in the user menu is set to inlet). The submask is used to set the chiller setpoint with inlet adjustment	
11.0	expressed in degrees centigrade	43.02 43.03
SUn	(If the FLOW parameter in the user menu is set to outlet). The submask is used to set the chiller setpoint with outlet adjustment	
9.5	expressed in degrees centigrade	43.05
UIn	(If the FLOW parameter in the user menu is set to inlet). The submask is used to set the heat pump setpoint with inlet adjustment	
0	expressed in degrees centigrade	43.04
UIn	(If the FLOW parameter in the user menu is set to outlet). The submask is used to set the heat pump setpoint with outlet adjustment	
0	expressed in degrees centigrade	43.06
Unit	Unit menu	
EUIn	Displays evaporator inlet temperature	
EU01	Displays evaporator 1 outlet temperature	
EU02	(If evaporator 2 is present). Displays evaporator 2 outlet temperature	
CdIn	(In water-water units, if the condenser inlet probe is enabled). Displays condenser inlet temperature	
Cd01	(In water-water units, if the condenser outlet probe is enabled). Displays condenser outlet temperature	
Cd02	(In water-water units with two condensers, if the condenser 2 outlet probe is enabled). Displays condenser 2 outlet temperature	
EHt	(In water/air units, if the external air temperature probe is enabled). Displays external temperature	
OPt	(In water-air units, if the operational temperature probe is enabled). Displays optional temperature	
HP1	Displays circuit 1 high pressure	

Mask	Description	Para n°
0	high pressure value	
HP2	Displays circuit 2 high pressure	
0	high pressure value	
AO 3	Displays value of analogue output 3	
0	value expressed in percent	
AO 4	Displays value of analogue output 4	
0	value expressed in percent	
HH 1	Displays compressor 1 operating hours expressed in thousands	
1	e.g.: "1"=1000 hours	
LH 1	Displays compressor 1 operating hours expressed in units	
50	e.g.: "50"=50 hours	
HH 2	Displays compressor 2 operating hours expressed in thousands	
1	e.g.: "1"=1000 hours	
LH 2	Displays compressor 2 operating hours expressed in units	
50	e.g.: "50"=50 hours	
SEL1	Enables compressor 1	
n	"N"=deselected, "Y"= selected	47.05
SEL2	Enables compressor 2	
n	"N"=deselected, "Y"= selected	47.06
CR13	Software release	
r.00	Software revision	
noA	No alarm active	

5 PARAMETERS TABLE

Para n°	Description of parameter	Default	U.M.	Min.	Max.
01.01	Type of unit (0:chiller - 1:heat pump - 2:multi-use)	0	-	0	P 99.01
01.02	Type of compressors (0:centrifuge - 1:hermetic - 2:semi-hermetic - 3:screw)	1	-	P 99.25	P 99.02
01.03	N° circuits	2	-	1	P 99.03
01.04	N° compressors per circuit	1	-	1	P 99.04
01.05	N° separation stages per compressor	0	-	0	P 99.05
01.06	Condensation type (0:none - 1:air - 2:water)	1	-	0	2
01.07	N° condensers	1	-	1	2
01.08	Reversal side for chiller-heat pump (0:water - 1:freon)	0	-		
01.09	Fan type (0:axial - 1:centrifuge)	0	-	0	1
01.10	Evaporation type (0:none - 1:water)	1	-	1	P 99.31
01.11	N° evaporators	1	-	0	P 99.06
01.12	N° evaporating coils	1	-	1	P 01.03
01.13	Freon type (0: R22 - 1: R134a - 2: R404a 3: R407c - 4: R410a 5: R507c - 6: R290 - 7: R600 - 8: R600a - 9: R717 - 10: R744)	3	-	0	10
01.14	Recovery enable (0:disabled - 1:enabled)	0	-		
01.15	Freecooling enable (0:disabled- 1:enabled)	0	-		
01.16	Condenser inlet temperature probe enable (0:disabled - 1:enabled)	0	-		
01.17	External air temperature probe enable (0:disabled - 1:enabled)	0	-		
01.18	Pressure transducers enable (0:disabled - 1: enabled)	0	-		
01.19	Low pressure transducers enable (0:disabled - 1: enabled)	0	-		
01.20	Start scale value of high pressure transducers	0.0	bar	0.0	P 01.21
01.21	End scale value of high pressure transducers	30.0	bar	P 01.20	45.0
01.22	Start scale value of low pressure transducers	0.0	bar	0.0	P 01.23
01.23	End scale value of low pressure transducers	30.0	bar	P 01.22	45.0
01.24	Optional temperature probe enable (0:disabled - 1:enabled)	0	-		
01.25	Condenser outlet temperature probe enable (0:disabled - 1:enabled)	0	-		
05.02	Winter setpoint limitation enable (0:disabled - 1:enabled)	0	-		
05.07	Winter setpoint limitation setpoint	-5.0	°C	-30.0	0.0
05.08	Winter setpoint limitation differential	5.0	°C	0.0	20.0
05.09	Maximum variation for winter setpoint limitation	5.0	°C	0.0	20.0
05.10	Minimum limit for winter setpoint limitation	45.0	°C	26.0	70.0
05.11	Coil fractioning enable (0:disabled - 1:enabled)	0	-		
05.12	Upper setpoint	10.0	bar	0.0	P 01.21
05.13	Upper differential	5.0	bar	0.0	10.0
05.14	Lower setpoint	12.0	bar	0.0	P 01.21
05.15	Lower differential	0.5	bar	0.0	10.0
05.16	Subcooling enable (0:disabled - 1:enabled)	0	-		
05.17	Start delay for subcooling adjustment	10	s	0	120
05.18	Activation delay for subcooling relay	5	s	0	120
05.19	Upper setpoint for opening/closing subcooling valves	6.0	°C	0.0	20.0
05.20	Lower setpoint for opening/closing subcooling valves	4.0	°C	0.0	20.0
05.21	Enable high temperature pressure switch control (0:disabled - 1:enabled)	0	-		
05.22	Pressure switch high temperature control setpoint	23.5	bar	P 01.20	P 01.21
05.23	Pressure switch high temperature control differential	2.0	bar	0.0	5.0
05.24	Pumpdown type (0:enabled - 1:during shutdown - 2:cyclical - 3:during shutdown and cyclical)	0	-	0	3
05.25	End pumpdown setpoint	2.5	bar	0.1	7.0
05.26	Maximum pumpdown time	3	s	3	60
05.27	Timeout for performing cyclical pumpdown	30	min	1	999
05.28	Configure pumpdown start modes	0	-	0	31
05.29	Enable valve override on all-in-one unit (0:disabled - 1:enabled)	1	-		
05.30	Modulating subcooling control enable for TECS (0:disabled - 1:enabled)	0	-		
07.01	Number of pumps on the evaporator	1	-	0	P 99.24
07.03	Recuperator pump enable (0:disabled - 1: enabled)	0	-		
07.04	Condenser pump enable (0:disabled - 1: enabled)	0	-		
07.08	Maximum acceptable continuous operating time of a pump before rotation is forced	7	gg	1	1500
07.09	Maximum difference in days between the two pumps before the 'Threshold' value of the pump is doubled	60	gg	1	9999
07.10	Pump override enable during a long period of inactivity (0:No - 1:Yes)	1	-		
07.11	Threshold time for long period of inactivity	30	gg	1	1500
07.12	Duration of pump override for long period of inactivity	10	s	1	999
09.02	Minimum compressor shut-down time (with step adjustment)	120	s	1	500
09.03	Minimum time between start-ups of different compressors (with step adjustment)	10	s	1	500
09.04	Minimum time between start-ups of the same compressor (with step adjustment)	360	s	1	900

Para n°	Description of parameter	Default	U.M.	Min.	Max.
09.05	Maximum number of compressor start-ups (with Quick Mind or modulating adjustment of screw compressors)	10	-	1	12
09.06	Maximum compressor start-up time (with Quick Mind or modulating adjustment of screw compressors)	150	s	1	500
09.07	Enables 100% screw compressor forcing (0:disabled - 1:enabled)	0	-		
09.08	Minimum separation mode temperature setpoint	-5.0	°C	-30.0	0.0
09.09	Separation re-activation differential	1.0	°C	0.5	10.0
09.11	Maximum separation time before 100% screw compressor forcing	1200	s	1	7200
09.12	100% forcing time following maximum separation time control	120	s	1	300
09.14	Period for power increase impulse (only modulating adjustment of screw compressors)	10	s	0	999
09.15	Minimum duration of charge impulse (only modulating adjustment of screw compressors)	0.3	s	0.0	P 09.16
09.16	Maximum duration of charge impulse (only modulating adjustment of screw compressors)	2.0	s	P 09.15	99.9
09.17	Period for power decrease impulse (only modulating adjustment of screw compressors)	10	s	1	999
09.18	Minimum duration of discharge impulse (only modulating adjustment of screw compressors)	0.5	s	0.0	P 09.19
09.19	Maximum duration of discharge impulse (only modulating adjustment of screw compressors)	3.0	s	P 09.18	99.9
09.20	Compressor start-up time (no-load)	30	s	1	60
09.21	Minimum time the separation stages remain active	10	s	1	60
09.22	Time the compressor oil valve remains active	10	s	1	60
09.23	Screw compressor model (0:Bitzer - 1:Hitachi - 2:Fu-Sheng)	0	-	0	2
09.24	Economiser enable (0:disabled - 1:enabled)	0	-		
09.25	Economiser start delay after compressor starts	120	s	1	500
09.26	Setpoint for disabling the economiser	15.0	bar	10.0	P 01.21
09.27	Differential for disabling the economiser	2.0	bar	0.1	9.9
09.28	Enable compressor discharge temperature control, liquid injection (0:disabled - 1:enabled)	0	-		
09.29	Setpoint for enabling discharge temperature control	110.0	°C	70.0	P 23.13
09.30	Differential for disabling discharge temperature control	10.0	°C	0.1	25.0
09.31	Minimum percentage for modulating centrifuge compressors	10	%	0	P 09.32
09.32	Maximum percentage for modulating centrifuge compressors	90	%	P 09.31	100
09.33	Number of revs for compressor start (for units with shall and tube evaporator and centrifuge compressors)	3200	rpmx10	100	6000
09.34	Start-up time for centrifuge compressors	20	s	0	300
09.35	Number of bypass valves for centrifugal compressors	1	-	0	1
09.36	Compression ration required to open the liquid line solenoid (centrifuge compressors only)	2.0	-	1.0	4.0
09.37	Bypass valve closing timeout upon compressor start-up (centrifuge compressors only)	20	s	15	120
09.38	Integral time for power increase (centrifuge compressors only)	5	s	1	120
09.39	Minimum variation for power increase (centrifuge compressors only)	1	%	0	100
09.40	Integral time for power decrease (centrifuge compressors only)	5	s	1	120
09.41	Minimum variation for power decrease (centrifuge compressors only)	1	%	0	100
09.42	Off percentage for centrifugal compressor 1	0	%	0	P 09.43
09.43	On percentage for centrifugal compressor 1	40	%	P 09.42	100
09.44	Off percentage for centrifugal compressor 2	0	%	0	P 09.45
09.45	On percentage for centrifugal compressor 2	40	%	P 09.44	100
09.46	Off percentage for centrifugal compressor 3	0	%	0	P 09.47
09.47	On percentage for centrifugal compressor 3	40	%	P 09.46	100
09.48	Off percentage for centrifugal compressor 4	0	%	0	P 09.49
09.49	On percentage for centrifugal compressor 4	40	%	P 09.48	100
09.58	Screw compressor oil control type (0:none, 1:direct, 2:indirect, 3:direct+indirect)	1	-	0	P 99.32
09.59	Width of maintenance dead area (percentage inside the dead area in which the compressor is not modulated)	15	%	0	100
09.60	Type of compressor discharge temperature probe (0:NTC 0-150°C, 1:PT1000)	0	-		
13.01	Valve configuration in status 0 - off -	0	-	0	99
13.02	Valve configuration in status 1 - chiller on -	0	-	0	99
13.03	Valve configuration in status 2 - ch+rec on -	0	-	0	99
13.04	Valve configuration in status 3 - chiller pd -	0	-	0	99
13.05	Valve configuration in status 4 - chiller off -	0	-	0	99
13.06	Valve configuration in status 5 - rec on -	0	-	0	99
13.07	Valve configuration in status 6 - defrost -	0	-	0	99
13.08	Valve configuration in status 7 - rec pd -	0	-	0	99
13.09	Valve configuration in status 8 - rec off -	0	-	0	99
13.10	Valve configuration in status 9 - heatpump on -	0	-	0	99
13.11	Valve configuration in status 10 - ch+rec pd -	0	-	0	99

Para n°	Description of parameter	Default	U.M.	Min.	Max.
13.12	Valve configuration in status 11 - heatpump pd -	0	-	0	99
13.13	Valve configuration in status 12 - heatpump off -	0	-	0	99
13.14	Valve 1 release time	0	s	0	999
13.15	Valve 2 release time	0	s	0	999
13.16	Valve 3 release time	0	s	0	999
13.17	Valve 4 release time	0	s	0	999
13.18	Valve 5 release time	0	s	0	999
13.19	Valve 6 release time	0	s	0	999
13.20	Valve 7 release time	0	s	0	999
13.21	Valve 8 release time	0	s	0	999
13.22	Valve 9 release time	0	s	0	999
13.23	Valve 10 release time	0	s	0	999
15.03	Pressure setpoint for forcing chiller status from recovery	23.5	bar	10.0	P 01.21
15.04	Pressure differential for forcing chiller status from recovery	5.0	bar	0.1	9.9
15.05	Enables cyclical forcing from chiller plus heat recovery mode to chiller mode	0	-		
15.06	Maximum time in chiller plus heat recovery mode before forcing to chiller mode	60	min	1	999
15.07	Minimum time in chiller mode before forcing to chiller plus heat recovery mode	120	s	40	500
17.01	Enable condensation control (0:No - 1:Yes)	1	-		
17.02	Type of condensation adjustment (0:Step. Cont - 1:Step - 2:Continuous)	2	-	0	2
17.03	N° condensation steps	3	-	1	P 99.23
17.04	Type of condensation control (0:Separate - 1:Individual - 2:Dual)	0	-	0	P 99.26
17.05	Linear operation model (0:Standard - 1:0-10V - 2:PWM - 3:FAE - 4:0-10V C5110973)	2	-	0	4
17.06	Condensation valve logic (0:direct - 1:reverse)	0	-		
17.10	Enable maximum condensation override in the chiller mode (0:No - 1:Yes)	0	-		
17.11	Maximum condensation override setpoint in the chiller mode	23.0	bar	10.0	P 01.21
17.12	Maximum condensation override differential in the chiller mode	3.0	bar	0.1	5.0
17.13	Enable minimum evaporation override in the heat pump mode (0:No - 1:Yes)	0	-		
17.14	Minimum evaporation override setpoint in the heat pump mode	1.0	bar	0.5	15.0
17.15	Minimum evaporation override differential in the heat pump mode	0.5	bar	0.1	5.0
17.32	Continuous adjustment setpoint in the chiller mode	14.0	bar	5.0	P 01.21
17.33	Continuous adjustment differential in the chiller mode	5.0	bar	0.1	15.0
17.34	Continuous adjustment setpoint in the heat pump mode	6.0	bar	0.5	15.0
17.35	Continuous adjustment differential in the heat pump mode	1.0	bar	0.1	15.0
17.36	Maximum condensation limit in continuous adjustment	100	%	P 17.37	100
17.37	Minimum condensation limit in continuous adjustment	30	%	0	P 17.36
17.38	Adjustment under the minimum condensation limit (0:adjustment always-1:adjustment Off)	1	-		
17.39	Condensation adjustment off differential	1.0	bar	0.0	5.0
17.40	Water modulating valve control (0:disabled - 1:enabled)	0	-		
17.41	Opening time 0-100% water modulating valve	70	s	0	999
19.01	Temperature difference for activating freecooling	1.0	°C	1.0	5.0
19.02	Temperature offset for deactivating freecooling	-4.0	°C	-10.0	P 99.21
19.03	Temperature delta for deactivating freecooling	1.0	°C	0.1	3.0
19.04	Type of freecooling valve control (0:direct - 1:reverse)	0	-		
19.05	Hysteresis temperature of individual fans	0.3	°C	0.0	1.0
19.06	Start/stop delay for each fan	20	s	1	500
21.01	Defrost type (0:standard - 1:Timer Tuning - 2:Timer Tuning + Auto Tuning)	2	-	0	2
21.02	Start defrost setpoint	3.0	bar	0.0	P 21.03
21.03	Stop defrost setpoint	14.0	bar	P 21.02	P 25.07
21.04	Defrost delay	1800	s	60	3600
21.05	Maximum defrost time	300	s	10	500
21.06	Drip time	120	s	0	500
21.07	Reference time at +10°C for calculating reference time.	60	s	30	P 21.08
21.08	Reference time at -10°C for calculating reference time.	180	s	P 21.07	P 99.28
21.09	Defrost start delay variation percentage	20	s	0	100
21.10	Maximum number of defrosts per hour	3	-	1	9
21.11	Calculation interval of the rate of change in the difference between external temperature and evaporation temperature	300	s	10	600
21.12	Maximum rate of change in the difference between external temperature and evaporation temperature.	3.0	°C	0.1	9.9
21.13	Initial threshold of difference between external temperature and evaporation temperature for changing the defrost delay.	15.0	°C	2.0	20.0
21.14	Offset for calculating the threshold for changing the defrost delay.	2.0	°C	0.5	9.9
21.15	Defrost delay variation factor	1	%	0	99
21.16	Circuit start-up bypass delay for override in the defrost mode	120	s	0	999
21.17	Delay in the defrost delay change with temperature difference higher than the calculated threshold	600	s	0	999
21.18	Maximum derived evaporation pressure	-0.1	bar/m	-10.0	10.0

Para n°	Description of parameter	Default	U.M.	Min.	Max.
21.19	Forced defrosting with low pressure (0:disabled - 1:enabled)	1	-		
21.20	Forced defrosting pressure threshold	1.7	bar	P 23.05	9.9
21.21	Circuit separation pressure with hermetic compressors	1.7	bar	P 23.05	9.9
21.22	Restore pressure for separating the circuits with hermetic compressors	2.1	bar	P 21.21	9.9
21.23	Free defrost enable (0:disabled - 1:enabled)	1	-		
21.24	Minimum external temperature for free defrost operation	4.0	°C	-10.0	10.0
21.25	Drip mode enable with compressors on (0:disabled - 1:enabled)	0	-		
23.01	High pressure from transducers alarm	28.0	bar	0.0	P 25.07
23.02	High pressure from transducers alarm differential	7.0	bar	0.0	30.0
23.03	N° of low pressure alarm automatic resets	3	-	0	5
23.04	Duration of low pressure alarm	120	s	0	500
23.05	Low pressure alarm setpoint	1.6	bar	0.1	9.9
23.06	Low pressure alarm differential	0.9	bar	0.1	4.0
23.07	Enable low pressure control with low external air temperature (0:No - 1:Yes)	0	-		
23.08	Start-up time for low pressure control with low external air temperature	120	s	10	P 23.04
23.09	Low pressure setpoint with low external air temperature	0.1	bar	0.1	P 23.05
23.10	Low pressure differential with low external air temperature	0.5	bar	0.1	4.0
23.11	N° of centrifugal compressor alarm automatic resets	3	-	0	5
23.12	Bypass time of compressor thermal protection alarm	10	s	0	360
23.13	Setpoint for activating the high compressor discharge temperature alarm	125.0	°C	70.0	125.0
23.14	Differential for deactivating the high compressor discharge temperature alarm	10.0	°C	2.0	25.0
23.15	Compressor oil alarm delay after starting	90	s	1	120
23.16	Compressor oil alarm delay during running	90	s	1	120
23.25	N° of flow switch alarm automatic resets	3	-	0	9
23.26	Evaporator flow switch start-up delay	10	s	1	120
23.27	Evaporator flow switch running delay	1	s	1	20
23.28	Recuperator flow switch start-up delay	10	s	1	120
23.29	Recuperator flow meter running delay	1	s	1	20
23.30	Condenser flow meter start-up delay	10	s	1	120
23.31	Condenser flow meter running delay	1	s	1	20
23.34	Maximum delay for automatic reset of flow switch alarms and pump operation in alarm conditions	15	s	15	999
27.01	Probe 1 calibration	0.0	°C/bar	-9.9	9.9
27.02	Probe 2 calibration	0.0	°C/bar	-9.9	9.9
27.03	Probe 3 calibration	0.0	°C/bar	-9.9	9.9
27.04	Probe 4 calibration	0.0	°C/bar	-9.9	9.9
27.05	Probe 5 calibration	0.0	°C/bar	-9.9	9.9
27.06	Probe 6 calibration	0.0	°C/bar	-9.9	9.9
27.07	Probe 7 calibration	0.0	°C/bar	-9.9	9.9
27.08	Probe 8 calibration	0.0	°C/bar	-9.9	9.9
27.09	Probe 9 calibration	0.0	°C/bar	-9.9	9.9
27.10	Probe 10 calibration	0.0	°C/bar	-9.9	9.9
27.11	Expansion 1 Probe 1 calibration	0.0	°C/bar	-9.9	9.9
27.12	Expansion 1 Probe 2 calibration	0.0	°C/bar	-9.9	9.9
27.13	Expansion 1 Probe 3 calibration	0.0	°C/bar	-9.9	9.9
27.14	Expansion 1 Probe 4 calibration	0.0	°C/bar	-9.9	9.9
27.21	Expansion 2 Probe 1 calibration	0.0	°C/bar	-9.9	9.9
27.22	Expansion 2 Probe 2 calibration	0.0	°C/bar	-9.9	9.9
27.23	Expansion 2 Probe 3 calibration	0.0	°C/bar	-9.9	9.9
27.24	Expansion 2 Probe 4 calibration	0.0	°C/bar	-9.9	9.9
27.25	Expansion 2 Probe 5 calibration	0.0	°C/bar	-9.9	9.9
27.26	Expansion 2 Probe 6 calibration	0.0	°C/bar	-9.9	9.9
27.27	Expansion 2 Probe 7 calibration	0.0	°C/bar	-9.9	9.9
27.28	Expansion 2 Probe 8 calibration	0.0	°C/bar	-9.9	9.9
27.31	Expansion 3 Probe 1 calibration	0.0	°C/bar	-9.9	9.9
27.32	Expansion 3 Probe 2 calibration	0.0	°C/bar	-9.9	9.9
27.33	Expansion 3 Probe 3 calibration	0.0	°C/bar	-9.9	9.9
27.34	Expansion 3 Probe 4 calibration	0.0	°C/bar	-9.9	9.9
27.51	Expansion 5 Probe 1 calibration	0.0	°C/bar	-9.9	9.9
27.52	Expansion 5 Probe 2 calibration	0.0	°C/bar	-9.9	9.9
27.53	Expansion 5 Probe 3 calibration	0.0	°C/bar	-9.9	9.9
27.54	Expansion 5 Probe 4 calibration	0.0	°C/bar	-9.9	9.9
31.01	Slave Probe 1 calibration	0.0	°C/bar	-9.9	9.9
31.02	Slave Probe 2 calibration	0.0	°C/bar	-9.9	9.9
31.03	Slave Probe 3 calibration	0.0	°C/bar	-9.9	9.9
31.04	Slave Probe 4 calibration	0.0	°C/bar	-9.9	9.9
31.05	Slave Probe 5 calibration	0.0	°C/bar	-9.9	9.9
31.06	Slave Probe 6 calibration	0.0	°C/bar	-9.9	9.9
31.07	Slave Probe 7 calibration	0.0	°C/bar	-9.9	9.9
31.08	Slave Probe 8 calibration	0.0	°C/bar	-9.9	9.9

Para n°	Description of parameter	Default	U.M.	Min.	Max.
31.09	Slave Probe 9 calibration	0.0	°C/bar	-9.9	9.9
31.10	Slave Probe 10 calibration	0.0	°C/bar	-9.9	9.9
31.11	Expansion 1 Slave Probe 1 calibration	0.0	°C/bar	-9.9	9.9
31.12	Expansion 1 Slave Probe 2 calibration	0.0	°C/bar	-9.9	9.9
31.13	Expansion 1 Slave Probe 3 calibration	0.0	°C/bar	-9.9	9.9
31.14	Expansion 1 Slave Probe 4 calibration	0.0	°C/bar	-9.9	9.9
31.21	Expansion 2 Slave Probe 1 calibration	0.0	°C/bar	-9.9	9.9
31.22	Expansion 2 Slave Probe 2 calibration	0.0	°C/bar	-9.9	9.9
31.23	Expansion 2 Slave Probe 3 calibration	0.0	°C/bar	-9.9	9.9
31.24	Expansion 2 Slave Probe 4 calibration	0.0	°C/bar	-9.9	9.9
31.25	Expansion 2 Slave Probe 5 calibration	0.0	°C/bar	-9.9	9.9
31.26	Expansion 2 Slave Probe 6 calibration	0.0	°C/bar	-9.9	9.9
31.27	Expansion 2 Slave Probe 7 calibration	0.0	°C/bar	-9.9	9.9
31.28	Expansion 2 Slave Probe 8 calibration	0.0	°C/bar	-9.9	9.9
31.31	Expansion 3 Slave Probe 1 calibration	0.0	°C/bar	-9.9	9.9
31.32	Expansion 3 Slave Probe 2 calibration	0.0	°C/bar	-9.9	9.9
31.33	Expansion 3 Slave Probe 3 calibration	0.0	°C/bar	-9.9	9.9
31.34	Expansion 3 Slave Probe 4 calibration	0.0	°C/bar	-9.9	9.9
31.51	Expansion 5 Slave Probe 1 calibration	0.0	°C/bar	-9.9	9.9
31.52	Expansion 5 Slave Probe 2 calibration	0.0	°C/bar	-9.9	9.9
31.53	Expansion 5 Slave Probe 3 calibration	0.0	°C/bar	-9.9	9.9
31.54	Expansion 5 Slave Probe 4 calibration	0.0	°C/bar	-9.9	9.9
35.01	Evaporator pump hour counter threshold	12	hx1000	0	999
35.02	Pump 2 hour counter threshold	12	hx1000	0	999
35.03	Compressor 1 hour counter threshold	10	hx1000	0	999
35.04	Compressor 2 hour counter threshold	10	hx1000	0	999
35.05	Compressor 3 hour counter threshold	10	hx1000	0	999
35.06	Compressor 4 hour counter threshold	10	hx1000	0	999
35.11	Compressor 1 hours (thousands)	0	hx1000	0	999
35.12	Compressor 1 hours (units)	0	h	0	999
35.13	Compressor 2 hours (thousands)	0	hx1000	0	999
35.14	Compressor 2 hours (units)	0	h	0	999
35.15	Compressor 3 hours (thousands)	0	hx1000	0	999
35.16	Compressor 3 hours (units)	0	h	0	999
35.17	Compressor 4 hours (thousands)	0	hx1000	0	999
35.18	Compressor 4 hours (units)	0	h	0	999
35.27	Recovery priority in winter (0:disabled - 1:enabled)	0	-		
35.28	Remote recovery control enable (0:disabled - 1:enabled)	0	-		
35.29	Evaporator antifreeze alarm setpoint	4.0	°C	-30.0	5.0
35.30	Evaporator antifreeze alarm differential	4.0	°C	1.0	10.0
35.31	Evaporator antifreeze heating element setpoint	4.0	°C	P 35.29	5.0
35.32	Evaporator antifreeze heating element differential	4.0	°C	1.0	10.0
35.33	Condenser antifreeze alarm setpoint	4.0	°C	-30.0	5.0
35.34	Condenser antifreeze alarm differential	4.0	°C	1.0	10.0
35.35	Recuperator antifreeze heating element setpoint	4.0	°C	-30.0	5.0
35.36	Recuperator antifreeze heating element differential	4.0	°C	1.0	10.0
35.37	Low water flow alarm setpoint	8.0	°C	3.0	15.0
35.38	Low water flow alarm delay	30	s	P 23.26	30
35.39	High/low inlet temperature (0:signal - 1:alarm)	0	-		
35.40	High/low inlet temperature alarm delay	30	s	1	999
35.41	High inlet water temperature alarm setpoint	30.0	°C	P 99.12	40.0
35.42	Low inlet water temperature alarm setpoint	15.0	°C	15.0	P 99.13
35.43	Pre-alarms enable (0:disabled - 1: enabled)	0	-		
35.44	Evaporator antifreeze pre-alarm offset with respect to evaporator antifreeze alarm (P23.17)	0.5	°C	-9.9	9.9
35.45	Evaporator antifreeze pre-alarm differential	1.0	°C	0.1	9.9
35.46	Low pressure pre-alarm offset with respect to low pressure alarm from transducer (P23.05)	0.5	bar	0.1	9.9
35.47	Low pressure pre-alarm differential	0.5	bar	0.1	9.9
35.48	High pressure pre-alarm offset with respect to high pressure alarm from transducer (P23.01)	-3.5	bar	-9.9	9.9
35.49	High pressure pre-alarm differential	4.0	bar	0.1	9.9
35.50	Low external air temperature alarm enable (0:disabled - 1:enabled)	0	-		
35.51	Low external air temperature alarm activation set point	-25.0	°C	-60.0	0.0
35.52	Differential for low external air temperature alarm deactivation	2.0	°C	0.0	50.0
35.53	Insufficient evaporation pressure alarm enable (0:disabled - 1:enabled)	0	-		
35.54	Insufficient evaporation pressure alarm delay	300	s	P 23.04	600
35.55	Insufficient evaporation pressure alarm run delay	30	s	1	300
35.56	Insufficient evaporation pressure alarm setpoint	3.4	bar	P 23.05	10.0
35.57	Insufficient evaporation pressure alarm differential	0.1	bar	0.0	1.0
39.01	Adjustment type (0:step - 1:Quick Mind or Modulating)	1	-		

Para n°	Description of parameter	Default	U.M.	Min.	Max.
39.02	Adjustment control type (0:inlet - 1:outlet)	1	-		
39.41	Time bands enable (0:disabled - 1:enabled)	0	-		
39.42	Serial line configuration (0:Disabled - 1:Supervision - 2:Sequencer - 3:Manager 3000)	0	-	0	3
39.43	On/off enable from supervisor (0:No - 1:Yes)	0	-		
39.44	Enable operating mode modification from supervisor (0:No - 1:Yes)	0	-		
39.45	#Set communication protocol with supervisor (1:Standard - 2:ModBus - 3:LonWorks - 4:Trend - 5:Bacnet)	2	-	1	5
39.46	#Speed of communication with supervisor setting (0:1200 baud - 1:2400 baud - 2:4800 baud - 3:9600 baud - 4:19200 baud)	3	-	0	4
39.47	#Set unit identification number with supervisor	11	-	1	200
39.48	Language (0:Italian - 1:English - 2:Extra language)	0	-	0	2
43.01	Operatine mode for unit: -ch(3:ch) -ch+fc(7:ch - 8:ch+fc) -ch+rec(2:ch+rec - 3:ch) -hp(3:ch - 4:hp) -Q(0:aut - 1:rec - 2:ch+rec - 3:ch) -NR(10:sum.aut - 11:sum.rec - 12:sum.ch+rec - 13:sum.ch - 14:win.hp - 15:win.rec - 16:win.aut)	3	-	P 99.07	P 99.08
43.02	Chiller setpoint with Quick Mind adjustment on inlet probe	11.0	°C	P 55.04	P 55.06
43.03	Chiller setpoint with step adjustment on inlet probe	9.5	°C	P 55.05	P 55.06
43.04	Heat pump setpoint with adjustment on inlet probe	42.5	°C	P 55.09	P 55.10
43.05	Chiller setpoint with adjustment on outlet probe	7.0	°C	P 55.07	P 55.08
43.06	Heat pump setpoint with adjustment on outlet probe	45.0	°C	P 55.11	P 55.12
43.07	Chiller dual setpoint	7.0	°C	P 99.11	P 99.12
43.08	Heat pump dual setpoint	45.0	°C	P 99.13	P 99.14
43.09	Recovery setpoint	42.5	°C	P 55.13	P 55.14
47.01	Circuit 1 enable (0:disabled - 1:enabled)	1	-		
47.02	Circuit 2 enable (0:disabled - 1:enabled)	1	-		
47.03	Circuit 3 enable (0:disabled - 1:enabled)	1	-		
47.04	Circuit 4 enable (0:disabled - 1:enabled)	1	-		
47.05	Compressor 1 enable (0:disabled - 1:enabled)	1	-		
47.06	Compressor 2 enable (0:disabled - 1:enabled)	1	-		
47.07	Compressor 3 enable (0:disabled - 1:enabled)	1	-		
47.08	Compressor 4 enable (0:disabled - 1:enabled)	1	-		
51.01	Enable pre-condensation (0:No - 1:Yes)	1	-		
51.02	Pre-condensation time	10	s	0	30
51.03	Pre-condensation percentage	66	%	50	100
51.04	Step 1 setpoint in chiller mode	15.0	bar	0.5	P 01.21
51.05	Step 1 differential in chiller mode	3.0	bar	0.1	9.9
51.06	Step 2 setpoint in chiller mode	16.5	bar	0.5	P 01.21
51.07	Step 2 differential in chiller mode	3.0	bar	0.1	9.9
51.08	Step 3 setpoint in chiller mode	18.0	bar	0.5	P 01.21
51.09	Step 3 differential in chiller mode	3.0	bar	0.1	9.9
51.10	Step 4 setpoint in chiller mode	19.0	bar	0.5	P 01.21
51.11	Step 4 differential in chiller mode	2.0	bar	0.1	9.9
51.12	Step 1 setpoint in heat pump mode	8.0	bar	0.5	15.0
51.13	Step 1 differential in heat pump mode	1.0	bar	0.1	5.0
51.14	Step 2 setpoint in heat pump mode	5.0	bar	0.5	15.0
51.15	Step 2 differential in heat pump mode	1.4	bar	0.1	5.0
51.16	Step 3 setpoint in heat pump mode	2.2	bar	0.5	15.0
51.17	Step 3 differential in heat pump mode	0.8	bar	0.1	5.0
51.18	Step 4 setpoint in heat pump mode	1.0	bar	0.5	15.0
51.19	Step 4 differential in heat pump mode	0.5	bar	0.1	5.0
51.20	Force circuits with fan overheating alarm (0:disabled - 1:enabled)	0	-		
55.01	Step adjustment type (0: proportional - 1: proportional+integral)	0	-		
55.02	Integral time	90	s	0	600
55.03	Integral offset limit	20	%	1	100
55.04	Minimum chiller setpoint (in the Quick Mind inlet adjustment mode)	11.0	°C	P 99.09	P 43.02
55.05	Minimum chiller setpoint (in the step inlet adjustment mode)	6.0	°C	P 99.09	P 43.03
55.06	Maximum chiller setpoint (with inlet adjustment)	20.0	°C	P 99.10	P 99.29
55.07	Minimum chiller setpoint (with outlet adjustment)	6.0	°C	P 99.09	P 43.05
55.08	Maximum chiller setpoint (with outlet adjustment)	15.0	°C	P 43.05	P 99.30
55.09	Minimum heat pump setpoint (with inlet adjustment)	30.0	°C	22.0	P 43.04
55.10	Maximum heat pump setpoint (with inlet adjustment)	44.0	°C	P 43.04	70.0
55.11	Minimum heat pump setpoint (with outlet adjustment)	30.0	°C	26.0	P 43.06
55.12	Maximum heat pump setpoint (with outlet adjustment)	48.0	°C	P 43.06	70.0
55.13	Minimum recovery setpoint	30.0	°C	26.0	P 55.14
55.14	Maximum recovery setpoint	50.0	°C	P 55.13	70.0
55.15	Forced summer shutdown	4.5	°C	P 35.29	P 99.11
55.16	Forced winter shutdown	51.0	°C	P 99.14	75.0
55.17	Temperature adjustment band (with step adjustment)	2.5	°C	1.0	10.0
55.18	Recovery adjustment band	2.5	°C	1.0	10.0
55.19	Enable dual setpoint (0:No - 1:Yes)	0	-		

Para n°	Description of parameter	Default	U.M.	Min.	Max.
55.20	Enable setpoint variation from external signal (0:No - 1:Yes)	0	-		
55.21	External signal type for setpoint variation (0:4-20 mA - 1:0-5 V)	0	-		
55.22	Minimum for setpoint varied from external signal	0.0	°C	0.0	10.0
55.23	Maximum for setpoint varied from external signal	6.0	°C	0.0	20.0
55.24	Enable recovery setpoint variation from external signal (0:No - 1:Yes)	0	-		
55.25	External signal type for recovery setpoint variation (0:4-20 mA - 1:0-5 V)	0	-		
55.26	Minimum for recovery setpoint varied from external signal	0.0	°C	0.0	10.0
55.27	Maximum for recovery setpoint varied from external signal	6.0	°C	0.0	10.0
55.28	Evaporator pump operating mode (0:automatic - 1:pump 1 only - 2:pump 2 only)	0	-	0	2
55.29	Minimum delay between pump start-up and compressor start-up	60	s	1	500
55.30	Pump shutdown delay	60	s	10	500
55.31	Enable limit demand (0:No - 1:Yes)	0	-		
55.32	Power limitation in chiller mode (%)	50	%	0	100
55.33	Power limitation in heat pump mode (%)	50	%	0	100
55.34	Power limitation in recovery mode (%)	50	%	0	100
55.35	On/off enable from digital input (0:No - 1:Yes)	1	-		
55.36	Chiller/heat pump enable from digital input (0:No - 1:Yes)	0	-		

5.1 Table of parameter limits (depending on unit configuration)

Para n°	Description of parameter
99.01	Maximum settable limit for configuring the machine type (depends on the type of hardware and the type of compressor): - with hardware L and centrifuge compressors (0:chiller) - with hardware B (1:chiller and heat pump) - other cases (2:chiller, heat pump, all-in-one)
99.02	Maximum settable limit for choosing the type of compressor (depends on the type of board installed): - with hardware B (1:hermetic) - with hardware L (1:centrifuge or hermetic) - with hardware XL (3:alternative or screw)
99.03	Maximum number of circuits (depends on the type of hardware): - with hardware B (2: maximum 2 circuits) - other cases (4: maximum 4 circuits, slave board required)
99.04	Maximum number of compressors per circuit (depends on the type of hardware and the configured type of compressors): - screw compressors (1:maximum one comp. per circuit) - alternative compressors (2:maximum two comp. per circuit) - hardware B with 1 circ. (2:maximum two comp. on the same circuit) - hardware B with 2 circ. (1:maximum one comp. per circuit) - centrifuge comp. with 1 circ. (4:maximum four comp. per circ.) - centrifuge comp. with 2 circ. (2:maximum two comp. per circ.) - centrifuge comp. with 4 circ. (1:maximum one comp. per circ.)
99.05	Maximum number of separation stages per compressor (depends on the set type of compressor): - with hermetic compressors (0:no separation stages) - other cases (2:maximum two separation stages per compressor)
99.06	Maximum number of evaporators (depends on the type of hardware and the number of configured cooling circuits): - with hardware B (1: maximum one evaporator) - with 2 cooling circuits (2:maximum two evaporators) - with 4 cooling circuits (4:maximum four evaporators)
99.07	Maximum value settable for the operating mode (depends on the configured type of machine): - Chiller (3:chiller) - Chiller + freecooling (7:chiller or chiller+fc) - Chiller + recovery (2:chiller+rec or chiller) - Heat pump (3:chiller or heatpump) - All-in-one unit (0:auto, recovery, chiller+rec or chiller) - Heat pump with recovery (10:summer auto, summer rec, summer ch+rec, summer ch., winter hp., winter rec or winter auto)
99.08	Maximum settable value for the operating mode (depends on the configured type of machine): - Chiller (3:chiller) - Chiller + freecooling (8:chiller or chiller+fc) - Chiller + recovery (3:chiller+rec or chiller) - Heat pump (4:chiller or heatpump) - All-in-one unit (3:auto, recovery, chiller+rec or chiller) - Heat pump with recovery (16:summer auto, summer rec, summer ch+rec, summer ch., winter hp., winter rec or winter auto)
99.09	Minimum settable value for the minimum chiller setpoint equal to anti-freeze setpoint + 2°C (P35.29+2°C)
99.10	Maximum settable value for the minimum chiller setpoint, depends on the set type of adjustment: - with step adjustment on inlet (P43.03) - with quick mind adjustment on inlet (P43.02)
99.11	Minimum chiller setpoint limit (depends on the type of adjustment): - with step adjustment on inlet (P55.05) - with quick mind adjustment on inlet (P55.04) - with adjustment on outlet (P55.07)
99.12	Maximum chiller setpoint limit (depends on the type of adjustment): - with adjustment on inlet (P55.06) - with adjustment on outlet (P55.08)
99.13	Minimum heat pump setpoint limit (depends on the type of adjustment): - with adjustment on inlet (P55.09) - with adjustment on outlet (P55.11)
99.14	Maximum heat pump setpoint limit (depends on the type of adjustment): - with adjustment on inlet (P55.10) - with adjustment on outlet (P55.12)
99.18	Advanced time band enable limit, depends on the advanced time band enable (P900.01): - with standard time band prog.: 1 (A bands), - with advanced time band prog.: 4 (bands A, B, C and D)
99.19	Minimum settable value for controlling time bands (depends on parameter settings) (1:off)
99.20	Maximum settable value for controlling time bands (depends on parameter settings) (2:adjustment)
99.21	Negated value of parameter: (P19.03+3°C)

Para n°	Description of parameter
99.23	Maximum number of available ventilation steps (depends on the type of board used and the configured type of compressors): - hardware XL (4:maximum four ventilation steps) - unit with centrifuge compressors (4:maximum four steps) - other cases (3:maximum three ventilation steps)
99.24	Maximum number of pumps available from board (2: maximum two pumps)
99.25	Minimum settable limit for choosing the compressor type (depends on the type of board installed): - with hardware B (1:hermetic) - with hardware L (0:centrifuge or hermetic) - with hardware XL (2:alternative or screw)
99.26	Possible ventilation type, depends on the number of cooling circuits: - unit with 4 circuits (2: separate, single or dual ventilation) - unit with 3 circuits (0: separate ventilation) - unit with 1 or 2 circuits (1: separate or single ventilation)
99.28	Maximum upper Timer-Tuning-Defrost band limit. This is the result of (maximum defrost time)-(reference time calculated by the system according to weather conditions and the unit operating mode) (P21.05 - P21.07 o P21.05 - P21.08)
99.29	Maximum settable chiller setpoint limit with inlet adjustment of: High inlet temperature alarm setpoint-7°C (P35.41 - 7°C)
99.30	Maximum settable chiller setpoint limit with outlet adjustment of: High inlet temperature alarm setpoint-12°C (P35.41 - 12°C)
99.31	maximum limit for the configurable type of evaporators (1:no evaporation or water evaporation)
99.32	maximum limit for setting the screw compressor oil management algorithms (depends on the set type of adjustment): - with modulating adjustment (1: none or direct) - with step adjustment (3: none, direct, indirect or direct+indirect)

6 DIAGRAMS

This section explains how some operating algorithms work. Most of the configuration parameters are contained in the manufacturer and service menus; the tree diagram for navigation is shown below.

Enter the manufacturer menu (not present in W3000 base) by pressing [Menu] / selecting the manufacturer menu by pressing [UP] / entering the password. The tree diagram of the manufacturer menu is shown in *figure 6.0a*.

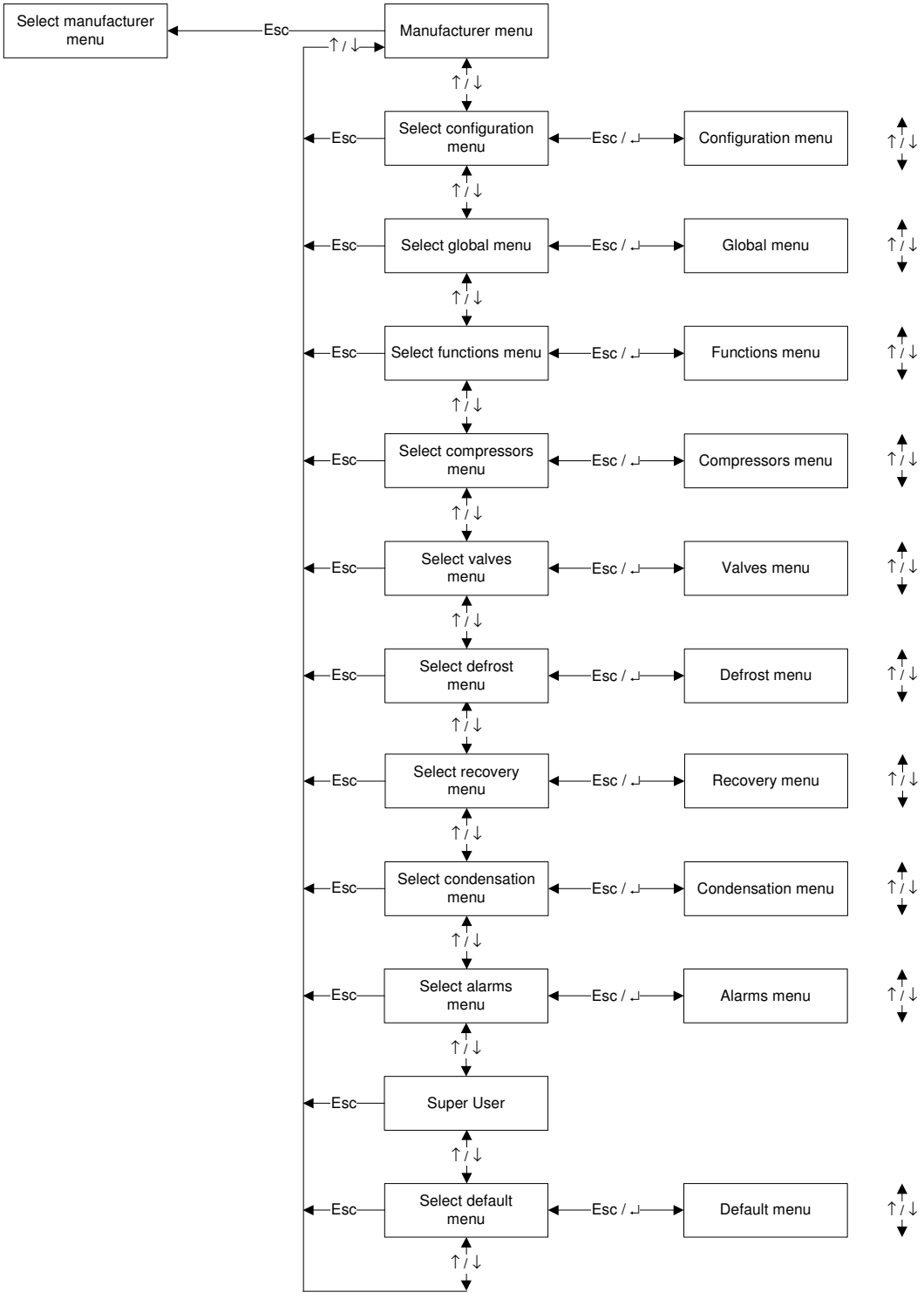


Figure 6.0a : *manufacturer menu tree diagram*

Enter the service menu (only partly present in W3000 base) by pressing [Menu] / selecting the service menu by pressing [UP] / entering the password. The tree diagram of the service menu is shown in *figure 6.0b.*

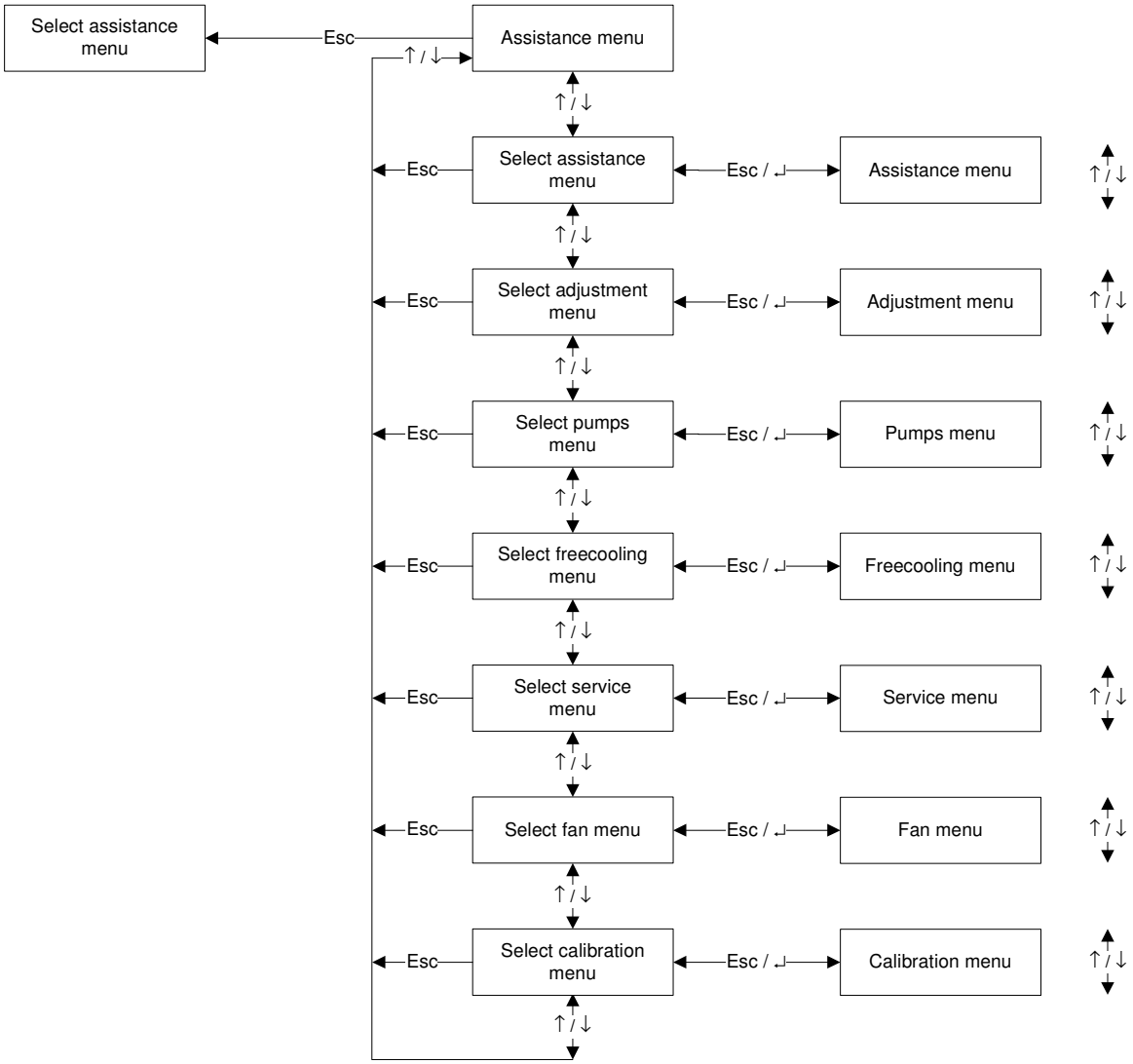


Figure 6.0b : *service menu tree diagram*

6.1 Freecooling

The "freecooling" function is applied to the efficient production of cold water by using external air.
The operating principle is illustrated in the *following figure*

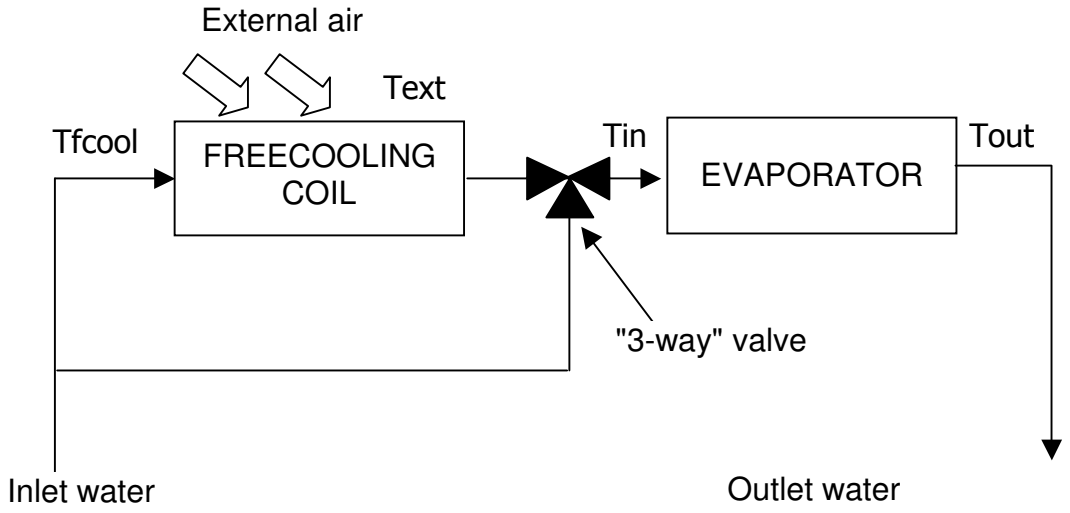


Figure 6.1: *block diagram of the freecooling activation circuit*

If the external water is cold, the valve closes and the water passes through the coil which cool the water by the water-air heat exchange achieved thanks to the internal fans. If, instead, the air is hot, there is no point in it passing through the coil and all the water is cooled with the evaporator compressors.
Further details of the valve and fan adjustment system are shown in figures 6.2.

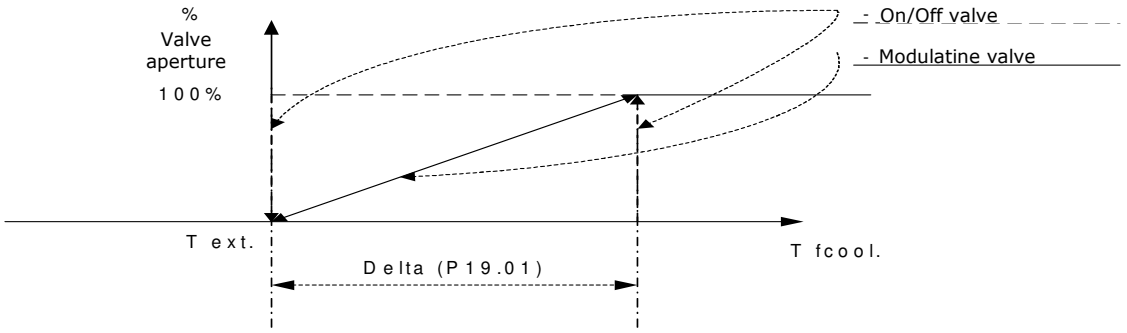


Figure 6.2a: operation of the valve (On/Off or modulating) depending on the difference between the unit inlet temperature (Tfcool) and that of the external air (Text)

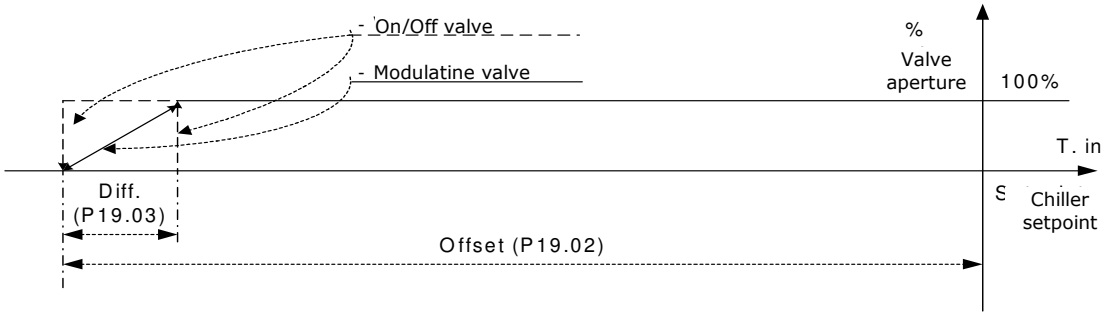


Figure 6.2b: *control in low freecooling temperature: to prevent the risk of the coil freezing, the valve is closed below a suitable offset*

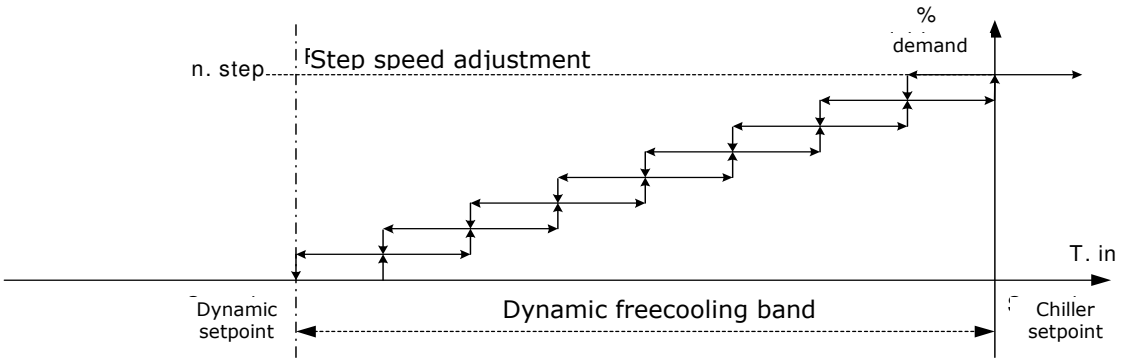


Figure 6.2c: fan adjustment in the step mode (example with 8 fans)

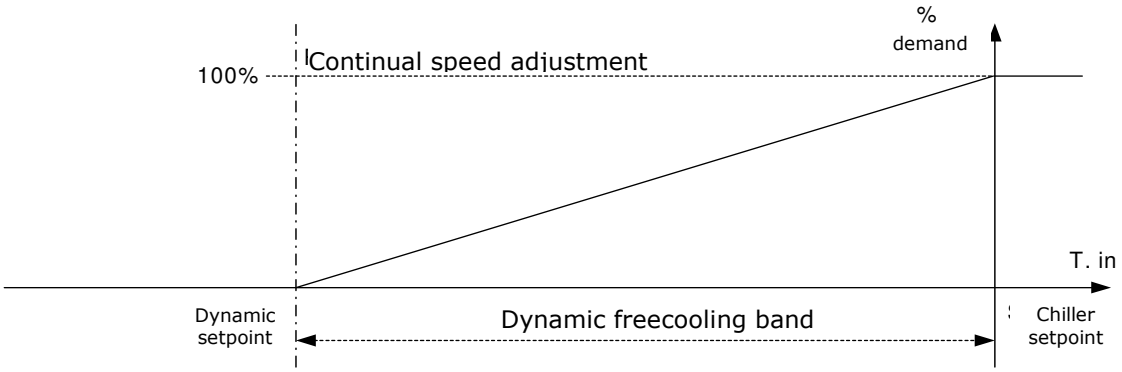


Figure 6.2d: fan adjustment in the continuous mode

6.2 Condensation

Condensation adjustment depends on how the fans are turned on.
Various condensation adjustment types in the "chiller" operating mode are shown below.
The fans may be turned on using the on/off system ("step") in which the fans are turned on progressively one after the other (figure 6.3a) or mutually excluded (figure 6.3b). Fans switched on in parallel but that increase fan speed (depending on pressure) are illustrated in figure 6.3c).

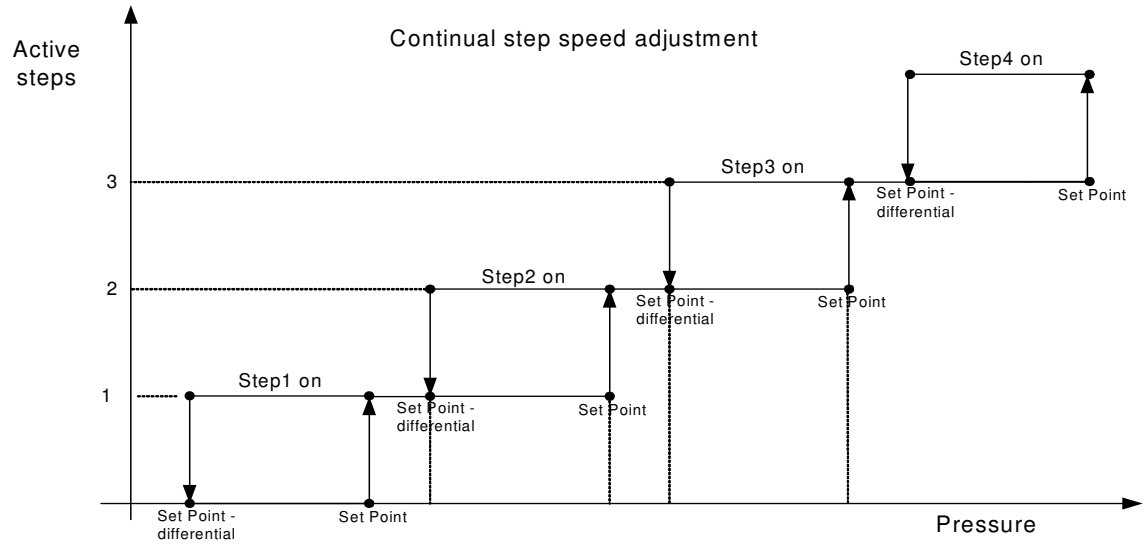


Figure 6.3a: "continuous step" condensation adjustment

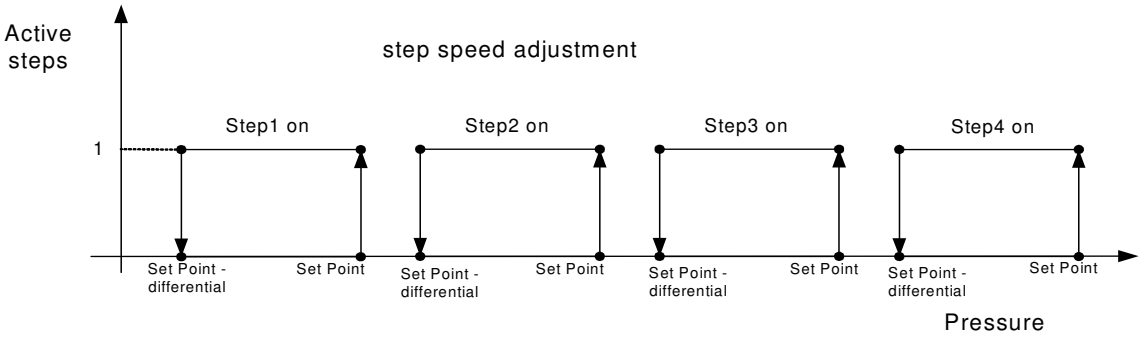


Figure 6.3b: "step" condensation adjustment

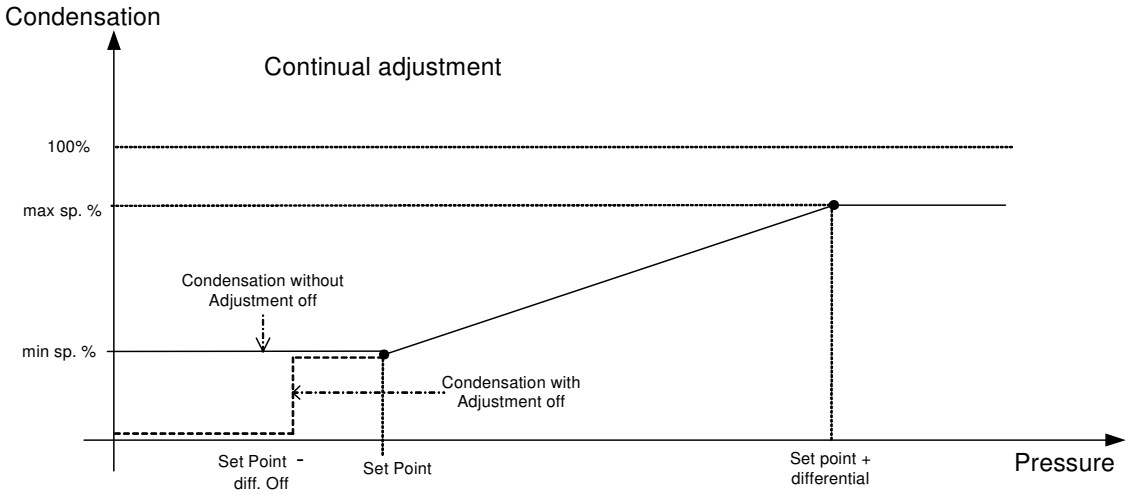
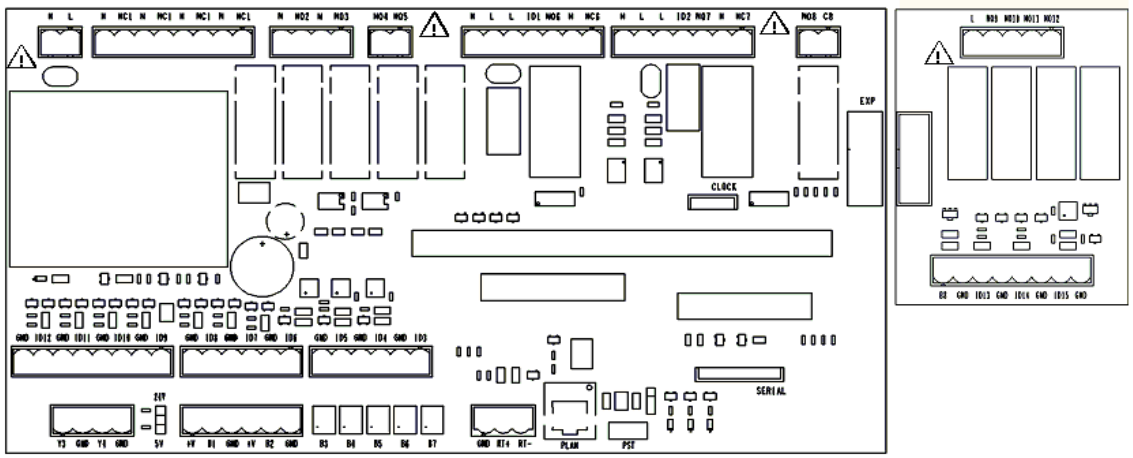


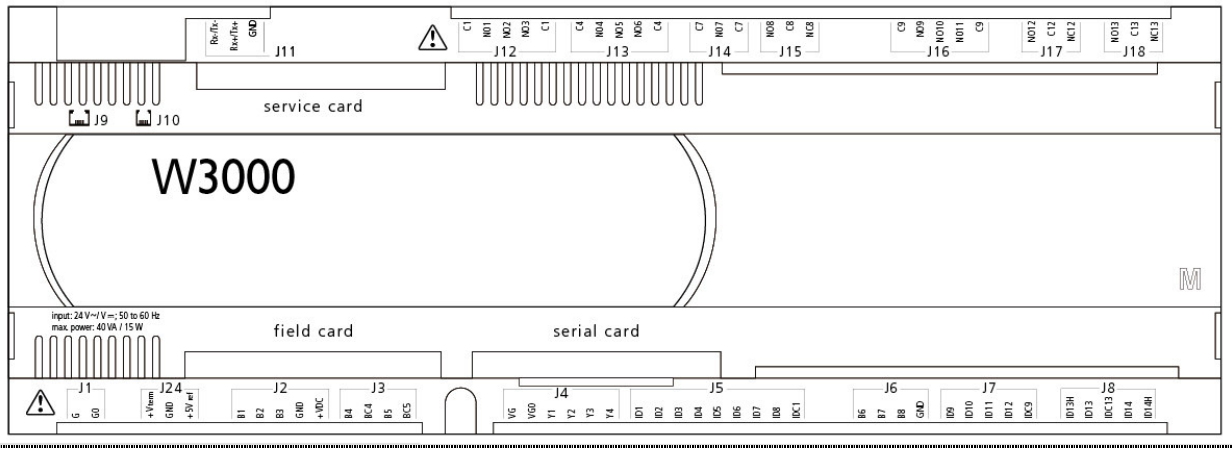
Figure 6.3c: *"step" condensation adjustment*

7 HARDWARE

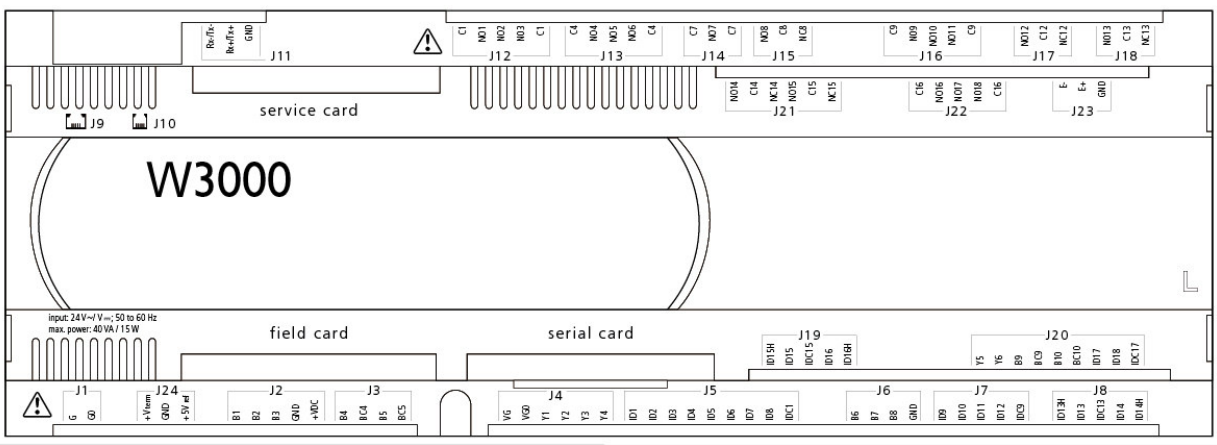
"B"



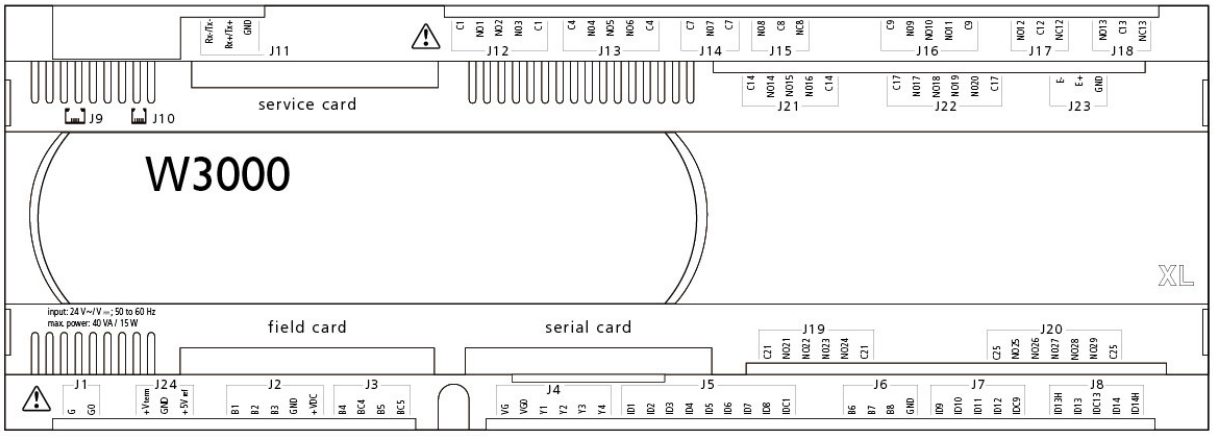
"M"



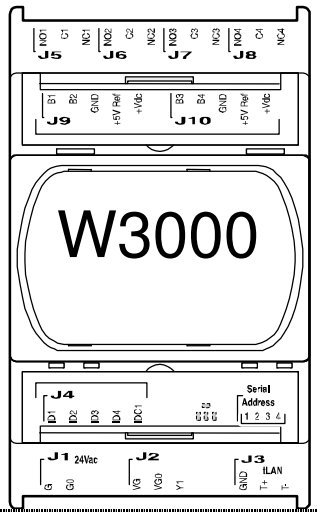
"L"



"XL"


W3000
XL
service card
field card
serial card
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J14
J15
J16
J17
J18
J19
J20
J21
J22
J23
J24

EXPANSION "E"


W3000
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
24Vac
ILAN
Serial
Address

8 INPUT/OUTPUT CONFIGURATION TABLE

8.1 HARDWARE "L"

8.1.1 Units with hermetic compressors

WATER-AIR UNIT with "L" axial fans		WATER-AIR UNIT with "L" centrifuge fans	
	Digital inputs		***Digital inputs***
ID1	Circuit 1 low pressure switch	ID1	Circuit 1 low pressure switch
ID2	Compressor 1 thermal protection	ID2	Compressor 1 thermal protection
ID3	Compressor 2 thermal protection	ID3	Compressor 2 thermal protection
ID4	Circuit 2 low pressure switch	ID4	Circuit 2 low pressure switch
ID5	Compressor 3 thermal protection	ID5	Compressor 3 thermal protection
ID6	Compressor 4 thermal protection	ID6	Compressor 4 thermal protection
ID7	Circuit 1 fan thermal protection	ID7	Fans thermal relay
ID8	Circuit 2 fan thermal protection	ID8	
ID9	Evaporator flow switch	ID9	Evaporator flow switch
ID10	Remote on/off	ID10	Remote on/off
ID11	Pump 1 thermal switch	ID11	Pump 1 thermal switch
ID12	Pump 2 thermal switch	ID12	Pump 2 thermal switch
ID13	Circuit 1 high pressure switch	ID13	Circuit 1 high pressure switch
ID14	Circuit 2 high pressure switch	ID14	Circuit 2 high pressure switch
ID15	Phase sequence	ID15	Phase sequence
ID16	System pressure control	ID16	General enable
ID17	Demand limit	ID17	Demand limit
ID18	Chiller/Heat pump from external contact	ID18	Chiller/Heat pump from external contact
	Analogue inputs		***Analogue inputs***
B1	Circuit 1 high pressure transducer	B1	Circuit 1 high pressure transducer
B2	Evap. outlet water temperature (blend)	B2	Evap. outlet water temperature (blend)
B3	Evaporator inlet water temperature	B3	Evaporator inlet water temperature
B4	Evap. outlet water temperature 1	B4	Evap. outlet water temperature 1
B5	Evap. outlet water temperature 2	B5	Evap. outlet water temperature 2
B6	Circuit 2 high pressure transducer	B6	Circuit 2 high pressure transducer
B7	External air temperature	B7	External air temperature
B8	Setpoint var. from ext. signal (4-20mA.0-10V)	B8	Setpoint var. from ext. signal (4-20mA.0-10V)
B9	Optional temperature	B9	Optional temperature
B10	Dual setpoint from external contact	B10	Dual setpoint from external contact
	Digital outputs		***Digital outputs***
NO1	Circuit 1 cycle reversal valve	NO1	Circuit 1 cycle reversal valve
NO2	Circuit 2 cycle reversal valve	NO2	Circuit 2 cycle reversal valve
NO3	Solenoid valve 1	NO3	Solenoid valve 1
NO4	Solenoid valve 2	NO4	Solenoid valve 2
NO5	Pump 1	NO5	Pump 1
NO6	Pump 2	NO6	Pump 2
NO7	Compressor 1	NO7	Compressor 1
NO8	Compressor 2	NO8	Compressor 2
NO9	Ventilation step 1 circuit 1	NO9	Main ventilation step
NO10	Ventilation step 2 circuit 1	NO10	
NO11	Ventilation step 3 circuit 1	NO11	
NO12	Evaporator antifreeze heating element	NO12	Evaporator antifreeze heating element
NO13	General alarms cumulative	NO13	General alarms cumulative
NO14	Compressor 3	NO14	Compressor 3
NO15	Compressor 4	NO15	Compressor 4
NO16	Ventilation step 1 circuit 2	NO16	Ventilation step 1
NO17	Ventilation step 2 circuit 2	NO17	Ventilation step 2
NO18	Ventilation step 3 circuit 2	NO18	Ventilation step 3
	Analogue outputs		***Analogue outputs***
Y1	Circuit 1 speed adjustment	Y1	Speed adjustment
Y2	Circuit 2 speed adjustment	Y2	
Y3	Circuit Defrost 1	Y3	Circuit Defrost 1
Y4	Circuit Defrost 2	Y4	Circuit Defrost 2
Y5		Y5	
Y6		Y6	

"L" WATER-WATER UNIT "L"

	Digital inputs
ID1	Circuit 1 low pressure switch
ID2	Compressor 1 thermal protection
ID3	Compressor 2 thermal protection
ID4	Circuit 2 low pressure switch
ID5	Compressor 3 thermal protection
ID6	Compressor 4 thermal protection
ID7	Condenser flow switch (units with freon-side reversal only)
ID8	
ID9	Evaporator flow switch
ID10	Remote on/off
ID11	Pump 1 thermal switch
ID12	Pump 2 thermal switch
ID13	Circuit 1 high pressure switch
ID14	Circuit 2 high pressure switch
ID15	Phase sequence
ID16	System pressure control
ID17	Demand limit
ID18	Chiller/Heat pump from external contact
	Analogue inputs
B1	Circuit 1 high pressure transducer
B2	Evap. outlet water temperature (blend)
B3	Evaporator inlet water temperature
B4	Evap. outlet water temperature 1
B5	Evap. outlet water temperature 2
B6	Circuit 2 high pressure transducer
B7	Outlet 2 water temp. / cond. inlet
B8	Setpoint var. from ext. signal (4-20mA.0-10V)
B9	Condenser outlet water temperature
B10	Dual setpoint from external contact
	Digital outputs
NO1	Unit operating mode: Chiller - Heat pump / Circuit 1 cycle reversal valve (units with freon-side reversal only)
NO2	Circuit 2 cycle reversal valve (units with freon-side reversal only)
NO3	Solenoid valve 1
NO4	Solenoid valve 2
NO5	Pump 1
NO6	Pump 2
NO7	Compressor 1
NO8	Compressor 2
NO9	
NO10	
NO11	
NO12	Evaporator antifreeze heating element
NO13	General alarms cumulative
NO14	Compressor 3
NO15	Compressor 4
NO16	
NO17	
NO18	
	Analogue outputs
Y1	Condensation adjustment
Y2	
Y3	
Y4	
Y5	
Y6	

"L" CONDENSING UNIT		"L" EVAPORATING UNIT	
	Digital inputs		***Digital inputs***
ID1	Circuit 1 low pressure switch	ID1	Circuit 1 low pressure switch
ID2	Compressor 1 thermal protection	ID2	Compressor 1 thermal protection
ID3	Compressor 2 thermal protection	ID3	Compressor 2 thermal protection
ID4	Circuit 2 low pressure switch	ID4	Circuit 2 low pressure switch
ID5	Compressor 3 thermal protection	ID5	Compressor 3 thermal protection
ID6	Compressor 4 thermal protection	ID6	Compressor 4 thermal protection
ID7	Circuit 1 fan thermal protection	ID7	Circuit 1 fan thermal protection
ID8	Circuit 2 fan thermal protection	ID8	Circuit 2 fan thermal protection
ID9		ID9	Evaporator flow switch
ID10	Remote on/off	ID10	Remote on/off
ID11		ID11	Pump 1 thermal switch
ID12		ID12	Pump 2 thermal switch
ID13	Circuit 1 high pressure switch	ID13	Circuit 1 high pressure switch
ID14	Circuit 2 high pressure switch	ID14	Circuit 2 high pressure switch
ID15	Phase sequence	ID15	Phase sequence
ID16		ID16	System pressure control
ID17		ID17	Demand limit
ID18		ID18	
	Analogue inputs		***Analogue inputs***
B1	Circuit 1 high pressure transducer	B1	
B2		B2	Evap. outlet water temperature (blend)
B3		B3	Evaporator inlet water temperature
B4	Step 1	B4	Evap. outlet water temperature 1
B5	Step 2	B5	Evap. outlet water temperature 2
B6	Circuit 2 high pressure transducer	B6	
B7		B7	
B8		B8	Setpoint var. from ext. signal (4-20mA.0-10V)
B9	Step 3	B9	
B10	Step 4	B10	Dual setpoint from external contact
	Digital outputs		***Digital outputs***
NO1		NO1	
NO2		NO2	
NO3	Solenoid valve 1	NO3	Solenoid valve 1
NO4	Solenoid valve 2	NO4	Solenoid valve 2
NO5		NO5	Pump 1
NO6		NO6	Pump 2
NO7	Compressor 1	NO7	Compressor 1
NO8	Compressor 2	NO8	Compressor 2
NO9	Ventilation step 1 circuit 1	NO9	
NO10	Ventilation step 2 circuit 1	NO10	
NO11	Ventilation step 3 circuit 1	NO11	
NO12		NO12	Evaporator antifreeze heating element
NO13	General alarms cumulative	NO13	General alarms cumulative
NO14	Compressor 3	NO14	Compressor 3
NO15	Compressor 4	NO15	Compressor 4
NO16	Ventilation step 1 circuit 2	NO16	
NO17	Ventilation step 2 circuit 2	NO17	
NO18	Ventilation step 3 circuit 2	NO18	
	Analogue outputs		***Analogue outputs***
Y1	Circuit 1 speed adjustment	Y1	
Y2	Circuit 2 speed adjustment	Y2	
Y3		Y3	
Y4		Y4	
Y5		Y5	
Y6		Y6	

8.1.2 Units with centrifuge compressors

WATER-WATER UNIT with "L" axial fans	
	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	Circuit 1 fan thermal protection
ID8	Circuit 2 fan thermal protection
ID9	Evaporator flow switch
ID10	Remote on/off
ID11	Pump 1 thermal switch
ID12	Pump 2 thermal switch
ID13	Circuit 1 high pressure switch
ID14	Circuit 2 high pressure switch
ID15	
ID16	
ID17	Demand limit
ID18	
	Analogue inputs
B1	Circuit 1 high pressure transducer
B2	Evap. outlet water temperature (blend)
B3	Evaporator inlet water temperature
B4	Evap. outlet water temperature 1
B5	Evap. outlet water temperature 2
B6	Circuit 2 high pressure transducer
B7	External air temperature
B8	Setpoint var. from ext. signal (4-20mA.0-10V)
B9	Optional temperature
B10	Dual setpoint from external contact
	Digital outputs
NO1	Ventilation step 4 circuit 1
NO2	Ventilation step 4 circuit 2
NO3	Solenoid valve 1
NO4	Solenoid valve 2
NO5	Pump 1
NO6	Pump 2
NO7	Compressor 1
NO8	Compressor 2
NO9	Ventilation step 1 circuit 1
NO10	Ventilation step 2 circuit 1
NO11	Ventilation step 3 circuit 1
NO12	Evaporator antifreeze heating element
NO13	General alarms cumulative
NO14	Compressor 3
NO15	Compressor 4
NO16	Ventilation step 1 circuit 2
NO17	Ventilation step 2 circuit 2
NO18	Ventilation step 3 circuit 2
	Analogue outputs
Y1	Circuit 1 speed adjustment
Y2	Circuit 2 speed adjustment
Y3	
Y4	
Y5	
Y6	

"L" WATER-WATER UNIT "L"	
	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	Evaporator flow switch
ID10	Remote on/off
ID11	Pump 1 thermal switch
ID12	Pump 2 thermal switch
ID13	Circuit 1 high pressure switch
ID14	Circuit 2 high pressure switch
ID15	
ID16	
ID17	Demand limit
ID18	
	Analogue inputs
B1	Circuit 1 high pressure transducer
B2	Evap. outlet water temperature (blend)
B3	Evaporator inlet water temperature
B4	Evap. outlet water temperature 1
B5	Evap. outlet water temperature 2
B6	Circuit 2 high pressure transducer
B7	Outlet temperature 2 cond / condenser inlet
B8	Setpoint var. from ext. signal (4-20mA.0-10V)
B9	Condenser outlet temperature
B10	Dual setpoint from external contact
	Digital outputs
NO1	Ventilation step 4 circuit 1
NO2	Ventilation step 4 circuit 2
NO3	Solenoid valve 1
NO4	Solenoid valve 2
NO5	Pump 1
NO6	Pump 2
NO7	Compressor 1
NO8	Compressor 2
NO9	
NO10	
NO11	
NO12	Evaporator antifreeze heating element
NO13	General alarms cumulative
NO14	Compressor 3
NO15	Compressor 4
NO16	
NO17	
NO18	
	Analogue outputs
Y1	
Y2	
Y3	
Y4	
Y5	
Y6	

8.2 HARDWARE "XL"

WATER-WATER UNIT with "XL" axial fans		WATER-WATER UNIT with "XL" centrifuge fans	
	Digital inputs		***Digital inputs***
ID1	Circuit 1 low pressure switch	ID1	Circuit 1 low pressure switch
ID2	Compressor 1 thermal protection	ID2	Compressor 1 thermal protection
ID3	Compressor 2 thermal protection	ID3	Compressor 2 thermal protection
ID4	Circuit 2 low pressure switch	ID4	Circuit 2 low pressure switch
ID5	Compressor 1 oil	ID5	Compressor 1 oil
ID6	Compressor 2 oil	ID6	Compressor 2 oil
ID7	Circuit 1 fan thermal protection	ID7	Fans thermal relay
ID8	Circuit 2 fan thermal protection	ID8	
ID9	Evaporator flow switch	ID9	Evaporator flow switch
ID10	Remote on/off	ID10	Remote on/off
ID11	Phase sequence	ID11	Phase sequence
ID12	Demand limit	ID12	Demand limit
ID13	Circuit 1 high pressure switch	ID13	Circuit 1 high pressure switch
ID14	Circuit 2 high pressure switch	ID14	Circuit 2 high pressure switch
	Analogue inputs		***Analogue inputs***
B1	Circuit 1 high pressure transducer	B1	Circuit 1 high pressure transducer
B2	Evap. outlet water temperature (blend)	B2	Evap. outlet water temperature (blend)
B3	Evaporator inlet water temperature	B3	Evaporator inlet water temperature
B4	Compressor 1 discharge temperature	B4	Compressor 1 discharge temperature
B5	Compressor 2 discharge temperature	B5	Compressor 2 discharge temperature
B6	Circuit 2 high pressure transducer	B6	Circuit 2 high pressure transducer
B7	Circuit 1 low pressure transducer	B7	Circuit 1 low pressure transducer
B8	Circuit 2 low pressure transducer	B8	Circuit 2 low pressure transducer
	Digital outputs		***Digital outputs***
NO1	Compressor 1 start 1	NO1	Compressor 1 start 1
NO2	Compressor 1 start 2	NO2	Compressor 1 start 2
NO3	Separation stage 1 compressor 1	NO3	Separation stage 1 compressor 1
NO4	Compressor 2 start 1	NO4	Compressor 2 start 1
NO5	Compressor 2 start 2	NO5	Compressor 2 start 2
NO6	Separation stage 1 compressor 2	NO6	Separation stage 1 compressor 2
NO7	Oil valve comp. 1/ Compressor 3 start 1	NO7	Oil valve comp. 1/ Compressor 3 start 1
NO8	Oil valve comp. 2/ Compressor 3 start 2	NO8	Oil valve comp. 2/ Compressor 3 start 2
NO9	Liquid injection 1 / Compressor 4 start 1	NO9	Liquid injection 1 / Compressor 4 start 1
NO10	Liquid injection 2 / Compressor 4 start 2	NO10	Liquid injection 2 / Compressor 4 start 2
NO11	Economiser compressor 1	NO11	Economiser compressor 1
NO12	Evaporator antifreeze heating element	NO12	Evaporator antifreeze heating element
NO13	General alarms cumulative	NO13	General alarms cumulative
NO14	Solenoid valve 1	NO14	Solenoid valve 1
NO15	Solenoid valve 2	NO15	Solenoid valve 2
NO16	Economiser compressor 2	NO16	Economiser compressor 2
NO17	Ventilation step 1 circuit 1	NO17	Main ventilation step
NO18	Ventilation step 2 circuit 1	NO18	
NO19	Ventilation step 3 circuit 1	NO19	
NO20	Ventilation step 4 circuit 1	NO20	
NO21	Ventilation step 1 circuit 2	NO21	Ventilation step 1 circuit 2
NO22	Ventilation step 2 circuit 2	NO22	Ventilation step 2 circuit 2
NO23	Ventilation step 3 circuit 2	NO23	Ventilation step 3 circuit 2
NO24	Ventilation step 4 circuit 2	NO24	Ventilation step 4 circuit 2
NO25	Compressor 1 no-load starting	NO25	Compressor 1 no-load starting
NO26	Compressor 2 no-load starting	NO26	Compressor 2 no-load starting
NO27	Separation stage 2 compressor 1	NO27	Separation stage 2 compressor 1
NO28	Separation stage 2 compressor 2	NO28	Separation stage 2 compressor 2
NO29	Drip tray resistor	NO29	Drip tray resistor
	Analogue outputs		***Analogue outputs***
Y1	Circuit 1 speed adjustment	Y1	Speed adjustment
Y2	Circuit 2 speed adjustment	Y2	
Y3	Circuit Defrost 1	Y3	Circuit Defrost 1
Y4	Circuit Defrost 2	Y4	Circuit Defrost 2

"XL" WATER-WATER UNIT		"XL" CONDENSING UNIT	
	Digital inputs		***Digital inputs***
ID1	Circuit 1 low pressure switch	ID1	Circuit 1 low pressure switch
ID2	Compressor 1 thermal protection	ID2	Compressor 1 thermal protection
ID3	Compressor 2 thermal protection	ID3	Compressor 2 thermal protection
ID4	Circuit 2 low pressure switch	ID4	Circuit 2 low pressure switch
ID5	Compressor 1 oil	ID5	Compressor 1 oil
ID6	Compressor 2 oil	ID6	Compressor 2 oil
ID7	Condenser flow switch (units with freon-side reversal only)	ID7	Circuit 1 fan thermal protection
		ID8	Circuit 2 fan thermal protection
ID8		ID9	
ID9	Evaporator flow switch	ID10	Remote on/off
ID10	Remote on/off	ID11	Phase sequence
ID11	Phase sequence	ID12	Demand limit
ID12	Demand limit	ID13	Circuit 1 high pressure switch
ID13	Circuit 1 high pressure switch	ID14	Circuit 2 high pressure switch
ID14	Circuit 2 high pressure switch		
			Analogue inputs
	Analogue inputs	B1	Circuit 1 high pressure transducer
B1	Circuit 1 high pressure transducer	B2	
B2	Evap. outlet water temperature (blend)	B3	
B3	Evaporator inlet water temperature	B4	Compressor 1 discharge temperature
B4	Compressor 1 discharge temperature	B5	Compressor 2 discharge temperature
B5	Compressor 2 discharge temperature	B6	Circuit 2 high pressure transducer
B6	Circuit 2 high pressure transducer	B7	Circuit 1 low pressure transducer
B7	Circuit 1 low pressure transducer	B8	Circuit 2 low pressure transducer
B8	Circuit 2 low pressure transducer		
			Digital outputs
	Digital outputs	NO1	Compressor 1 start 1
NO1	Compressor 1 start 1	NO2	Compressor 1 start 2
NO2	Compressor 1 start 2	NO3	Separation stage 1 compressor 1
NO3	Separation stage 1 compressor 1	NO4	Compressor 2 start 1
NO4	Compressor 2 start 1	NO5	Compressor 2 start 2
NO5	Compressor 2 start 2	NO6	Separation stage 1 compressor 2
NO6	Separation stage 1 compressor 2	NO7	Oil valve comp. 1/ Compressor 3 start 1
NO7	Oil valve comp. 1/ Compressor 3 start 1	NO8	Oil valve comp. 2/ Compressor 3 start 2
NO8	Oil valve comp. 2/ Compressor 3 start 2	NO9	Liquid injection 1 / Compressor 4 start 1
NO9	Liquid injection 1 / Compressor 4 start 1	NO10	Liquid injection 2 / Compressor 4 start 2
NO10	Liquid injection 2 / Compressor 4 start 2	NO11	Economiser compressor 1
NO11	Economiser compressor 1	NO12	
NO12	Evaporator antifreeze heating element	NO13	General alarms cumulative
NO13	General alarms cumulative	NO14	Solenoid valve 1
NO14	Solenoid valve 1	NO15	Solenoid valve 2
NO15	Solenoid valve 2	NO16	Economiser compressor 2
NO16	Economiser compressor 2	NO17	Ventilation step 1 circuit 1
NO17		NO18	Ventilation step 2 circuit 1
NO18		NO19	Ventilation step 3 circuit 1
NO19		NO20	Ventilation step 4 circuit 1
NO20		NO21	Ventilation step 1 circuit 2
NO21		NO22	Ventilation step 2 circuit 2
NO22		NO23	Ventilation step 3 circuit 2
NO23		NO24	Ventilation step 4 circuit 2
NO24		NO25	Compressor 1 no-load starting
NO25	Compressor 1 no-load starting	NO26	Compressor 2 no-load starting
NO26	Compressor 2 no-load starting	NO27	Separation stage 2 compressor 1
NO27	Separation stage 2 compressor 1	NO28	Separation stage 2 compressor 2
NO28	Separation stage 2 compressor 2	NO29	
NO29			
			Analogue outputs
	Analogue outputs	Y1	Circuit 1 speed adjustment
Y1	Condensation adjustment	Y2	Circuit 2 speed adjustment
Y2		Y3	
Y3		Y4	
Y4			

"XL" EVAPORATING UNIT

	Digital inputs
ID1	Circuit 1 low pressure switch
ID2	Compressor 1 thermal protection
ID3	Compressor 2 thermal protection
ID4	Circuit 2 low pressure switch
ID5	Compressor 1 oil
ID6	Compressor 2 oil
ID7	Circuit 1 fan thermal protection
ID8	Circuit 2 fan thermal protection
ID9	Evaporator flow switch
ID10	Remote on/off
ID11	Phase sequence
ID12	Demand limit
ID13	Circuit 1 high pressure switch
ID14	Circuit 2 high pressure switch
	Analogue inputs
B1	
B2	Evap. outlet water temperature (blend)
B3	Evaporator inlet water temperature
B4	Compressor 1 discharge temperature
B5	Compressor 2 discharge temperature
B6	
B7	
B8	
	Digital outputs
NO1	Compressor 1 start 1
NO2	Compressor 1 start 2
NO3	Separation stage 1 compressor 1
NO4	Compressor 2 start 1
NO5	Compressor 2 start 2
NO6	Separation stage 1 compressor 2
NO7	Oil valve comp. 1/ Compressor 3 start 1
NO8	Oil valve comp. 2/ Compressor 3 start 2
NO9	Liquid injection 1 / Compressor 4 start 1
NO10	Liquid injection 2 / Compressor 4 start 2
NO11	Economiser compressor 1
NO12	Evaporator antifreeze heating element
NO13	General alarms cumulative
NO14	Solenoid valve 1
NO15	Solenoid valve 2
NO16	Economiser compressor 2
NO17	
NO18	
NO19	
NO20	
NO21	
NO22	
NO23	
NO24	
NO25	Compressor 1 no-load starting
NO26	Compressor 2 no-load starting
NO27	Separation stage 2 compressor 1
NO28	Separation stage 2 compressor 2
NO29	
	Analogue outputs
Y1	
Y2	
Y3	
Y4	

8.3 HARDWARE "B"

Water/air chiller with "B" axial fans		Water/air chiller with "B" centrifuge fans	
	Digital inputs		***Digital inputs***
ID1	Circuit 1 high pressure switch	ID1	Circuit 1 high pressure switch
ID2	Circuit 2 high pressure switch	ID2	Circuit 2 high pressure switch
ID3	Remote on/off	ID3	Remote on/off
ID4	Chiller/Heat pump from external contact	ID4	Chiller/Heat pump from external contact
ID5	Evaporator flow switch	ID5	Evaporator flow switch
ID6	Circuit 1 low pressure switch	ID6	Circuit 1 low pressure switch
ID7	Circuit 2 low pressure switch	ID7	Circuit 2 low pressure switch
ID8	Compressor 1 thermal protection	ID8	Compressor 1 thermal protection
ID9	Compressor 2 thermal protection	ID9	Compressor 2 thermal protection
ID10	Pump 1 thermal protection	ID10	Pump 1 thermal protection
ID11	Fans thermal relay	ID11	Fans thermal relay
ID12	Phase sequence	ID12	Phase sequence
ID13	System pressure control	ID13	System pressure control
ID14	Pump 2 thermal protection	ID14	Pump 2 thermal protection
ID15	Demand limit	ID15	Demand limit
	Analogue inputs		***Analogue inputs***
B1	Circuit 1 high pressure transducer	B1	Circuit 1 high pressure transducer
B2	Circuit 2 high pressure transducer	B2	Circuit 2 high pressure transducer
B3	Evaporator inlet water temperature	B3	Evaporator inlet water temperature
B4	Evaporator outlet 1 water temperature	B4	Evaporator outlet 1 water temperature
B5	Evaporator outlet 2 water temperature	B5	Evaporator outlet 2 water temperature
B6	Optional temperature	B6	Optional temperature
B7	External temperature	B7	External temperature
B8	Setpoint var. from ext. signal output 4-20 mA	B8	Setpoint var. from ext. signal output 4-20 mA
	Digital outputs		***Digital outputs***
NO1	Evaporator antifreeze heating element	NO1	Evaporator antifreeze heating element
NO2	Circuit 1 cycle reversal valve	NO2	Circuit 1 cycle reversal valve
NO3	Circuit 2 cycle reversal valve	NO3	Circuit 2 cycle reversal valve
NO4		NO4	Main fan step
NO5	Pump 1	NO5	Pump 1
NO6	Compressor 1	NO6	Compressor 1
NO7	Compressor 2	NO7	Compressor 2
NO8	General alarms cumulative	NO8	General alarms cumulative
NO9	Pump 2	NO9	Pump 2
NO10	Ventilation step 1	NO10	Ventilation step 1
NO11	Ventilation step 2	NO11	Ventilation step 2
NO12	Ventilation step 3	NO12	Ventilation step 3
	Analogue outputs		***Analogue outputs***
Y1	Circuit 1 speed adjustment (PWM)	Y1	Speed adjustment (PWM)
Y2	Circuit 2 speed adjustment (PWM)	Y2	

WATER-WATER UNIT "B"

	Digital inputs	
ID1	Circuit 1 high pressure switch	
ID2	Circuit 2 high pressure switch	
ID3	Remote on/off	
ID4	Chiller/Heat pump from external contact	
ID5	Evaporator flow switch	
ID6	Circuit 1 low pressure switch	
ID7	Circuit 2 low pressure switch	
ID8	Compressor 1 thermal protection	
ID9	Compressor 2 thermal protection	
ID10	Pump 1 thermal protection	
ID11	Condenser flow switch (units with freon-side reversal only)	
ID12	Phase sequence	
ID13	System pressure control	
ID14	Pump 2 thermal switch	
ID15	Demand limit	
	Analogue inputs	
B1	Circuit 1 high pressure transducer	
B2	Circuit 2 high pressure transducer	
B3	Evaporator inlet water temperature	
B4	Evaporator outlet 1 water temperature	
B5	Evaporator outlet 2 water temperature	
B6	Condenser outlet water temperature	
B7	Outlet 2 water temp. / cond. inlet	
B8	Setpoint var. from ext. signal output 4-20 mA	
	Digital outputs	
NO1	Evaporator antifreeze heating element	
NO2	Unit operating mode: Chiller - Heat pump / Circuit 1 cycle reversal valve (units with freon-side reversal only)	
NO3	Circuit 2 cycle reversal valve (units with freon-side reversal only)	
NO4		
NO5	Pump 1	
NO6	Compressor 1	
NO7	Compressor 2	
NO8	General alarms cumulative	
NO9	Pump 2 / Condenser pump (units with freon-side reversal only)	
NO10		
NO11		
NO12		
	Analogue outputs	
Y1	Condensation adjustment (PWM)	
Y2		

8.4 EXPANSIONS

8.4.1 Units with hermetic compressors

"E" expansion for chiller with recovery.

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
ID15	
ID16	
ID17	
ID18	

	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
B9	
B10	

	Digital outputs
NO1	Recovery valve circuit 1
NO2	Recovery valve circuit 2
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	

	Analogue outputs
Y1	
Y2	
Y3	
Y4	
Y5	
Y6	

Expansion "E" - address 1

Digital inputs	
Recovery flow switch	ID1
Recovery remote enable	ID2
	ID3
	ID4

Analogue inputs	
Circuit 1 liquid temperature	B1
Circuit 2 liquid temperature	B2
Recovery inlet temperature	B3
Recovery outlet temperature	B4

Digital outputs	
Subcooling circuit 1-1	NO1
Subcooling circuit 1-2	NO2
Subcooling circuit 2-1	NO3
Subcooling circuit 2-2	NO4

Analogue outputs	
	Y1

"E" Expansion Heat pumps for low external air temperatures

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
ID15	
ID16	
ID17	
ID18	

	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
B9	
B10	

	Digital outputs
NO1	
NO2	
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	

	Analogue outputs
Y1	
Y2	
Y3	
Y4	
Y5	
Y6	

Expansion "E" - address 1

Digital inputs	
	ID1
	ID2
	ID3
	ID4

Analogue inputs	
Compressor 1 outlet temperature	B1
Compressor 2 outlet temperature	B2
Compressor 3 outlet temperature	B3
Compressor 4 outlet temperature	B4

Digital outputs	
Circuit 1 relay	NO1
Circuit 2 relay	NO2
	NO3
	NO4

Analogue outputs	
	Y1

"M" expansion for hermetic compressors. Air-cooled polyvalent units and heat pumps with total recovery.

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
ID15	
ID16	
ID17	
ID18	Not used

	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
B9	
B10	

	Digital outputs
NO1	Not used
NO2	Not used
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	

	Analogue outputs
Y1	
Y2	
Y3	
Y4	
Y5	
Y6	

Expansion "M" - address 2

Digital inputs	
Recovery flow switch	ID1
	ID2
	ID3
	ID4
	ID5
	ID6
	ID7
	ID8
	ID9
	ID10
	ID11
	ID12
	ID13
	ID14

Analogue inputs	
Circuit 1 low pressure transducer	B1
Circuit 2 low pressure transducer	B2
Recovery inlet temperature	B3
Recovery outlet temperature	B4
	B5
	B6
	B7
	B8

Digital outputs	
V 1-1	NO1
V 1-2	NO2
V 1-3	NO3
V 1-4	NO4
V 1-5	NO5
	NO6
	NO7
V 2-1	NO8
V 2-2	NO9
V 2-3	NO10
V 2-4	NO11
V 2-5	NO12
	NO13

Analogue outputs	
	Y1
	Y2
	Y3
	Y4

"M" expansion for hermetic compressors. Water-cooled polyvalent units and heat pumps with total recovery.

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
ID15	
ID16	
ID17	
ID18	

	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
B9	
B10	

	Digital outputs
NO1	Not used
NO2	Not used
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	

	Analogue outputs
Y1	
Y2	
Y3	
Y4	
Y5	
Y6	

Expansion "M" - address 2

Digital inputs	
Recovery flow switch	ID1
Condenser flow switch	ID2
Condenser pump thermal switch	ID3
	ID4
	ID5
	ID6
	ID7
	ID8
	ID9
	ID10
	ID11
	ID12
	ID13
	ID14

Analogue inputs	
Circuit 1 low pressure transducer	B1
Circuit 2 low pressure transducer	B2
Recovery inlet temperature	B3
Recovery outlet temperature	B4
Condenser inlet temperature (if 2 cond.)	B5
	B6
	B7
	B8

Digital outputs	
V 1-1	NO1
V 1-2	NO2
V 1-3	NO3
V 1-4	NO4
V 1-5	NO5
	NO6
Condenser pump	NO7
V 2-1	NO8
V 2-2	NO9
V 2-3	NO10
V 2-4	NO11
V 2-5	NO12
	NO13

Analogue outputs	
	Y1
	Y2
	Y3
	Y4

"E" expansion for hermetic compressors. Chiller with freecooling.

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
ID15	
ID16	
ID17	
ID18	

	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
B9	
B10	

	Digital outputs
NO1	Freecooling valve Off
NO2	Freecooling valve On
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	

	Analogue outputs
Y1	
Y2	
Y3	
Y4	
Y5	
Y6	

Expansion "E" - address 3

Digital inputs	
Glycol pump thermal switch	ID1
	ID2
	ID3
	ID4

Analogue inputs	
Circuit 1 low pressure transducer	B1
Circuit 2 low pressure transducer	B2
Freecooling inlet temperature	B3
	B4

Digital outputs	
Coil charge valve circuit 1	NO1
Coil discharge valve circuit 1	NO2
Coil charge valve circuit 2	NO3
Coil discharge valve circuit 2	NO4

Analogue outputs	
Freecooling modulating valve	Y1

8.4.2 Units with alternative and screw compressors

"E" expansions for chillers with heat pumps or two pumps.

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
	Digital outputs
NO1	
NO2	
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	
NO19	
NO20	
NO21	
NO22	
NO23	
NO24	
NO25	
NO26	
NO27	
NO28	
NO29	
	Analogue outputs
Y1	
Y2	
Y3	
Y4	

Expansion "E" - address 5

Digital inputs	
Chiller/Heat pump from external contact	ID1
	ID2
Pump 1 thermal switch	ID3
Pump 2 thermal switch	ID4

Analogue inputs	
Evap. outlet water temperature 1	B1
Evap. outlet water temperature 2	B2
External temp. / Cond. 2 outlet water temp.	B3
Optional temp. / Cond. outlet water temp.	B4

Digital outputs	
Rev. cycle valve 1/recovery 1/freecooling OFF	NO1
Rev. cycle valve 2/recovery 2/freecooling ON	NO2
Pump 1	NO3
Pump 2	NO4

Analogue outputs	
	Y1

"E" expansions for chillers with external signal setpoint variation or dual setpoint.

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
	Digital outputs
NO1	
NO2	
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	
NO19	
NO20	
NO21	
NO22	
NO23	
NO24	
NO25	
NO26	
NO27	
NO28	
NO29	
	Analogue outputs
Y1	
Y2	
Y3	
Y4	

Expansion "E" - address 3

Digital inputs	
Glycol pump thermal switch	ID1
Dual setpoint	ID2
	ID3
	ID4

Analogue inputs	
Setpoint var. from ext. signal (4-20mA)	B1
Recovery setpoint var. from ext. signal (4-20mA)	B2
Freecooling inlet temperature	B3
	B4

Digital outputs	
Coil charge valve circuit 1	NO1
Coil discharge valve circuit 1	NO2
Coil charge valve circuit 2	NO3
Coil discharge valve circuit 2	NO4

Analogue outputs	
Freecooling modulating valve	Y1

"E" expansions for chillers with recovery.

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
	Digital outputs
NO1	
NO2	
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	
NO19	
NO20	
NO21	
NO22	
NO23	
NO24	
NO25	
NO26	
NO27	
NO28	
NO29	
	Analogue outputs
Y1	
Y2	
Y3	
Y4	

Expansion "E" - address 1

Digital inputs	
Recovery flow switch	ID1
Recovery remote enable	ID2
	ID3
	ID4

Analogue inputs	
Circuit 1 liquid temperature	B1
Circuit 2 liquid temperature	B2
Recovery inlet temperature	B3
Recovery outlet temperature	B4

Digital outputs	
Subcooling circuit 1-1	NO1
Subcooling circuit 1-2	NO2
Subcooling circuit 2-1	NO3
Subcooling circuit 2-2	NO4

Analogue outputs	
	Y1

Expansion "E" - address 5

Digital inputs	
Chiller/Heat pump from external contact	ID1
	ID2
Pump 1 thermal switch	ID3
Pump 2 thermal switch	ID4

Analogue inputs	
Evap. outlet water temperature 1	B1
Evap. outlet water temperature 2	B2
External temp. / Cond. 2 outlet water temp.	B3
Optional temp. / Cond. outlet water temp.	B4

Digital outputs	
Rev. cycle valve 1/recovery 1/freecooling OFF	NO1
Rev. cycle valve 2/recovery 2/freecooling ON	NO2
Pump 1	NO3
Pump 2	NO4

Analogue outputs	
	Y1

"M" expansion for alternative and screw compressors. Air-cooled polyvalent units and heat pumps with total recovery.

		Expansion "M" - address 2	
	Digital inputs	***Digital inputs***	
ID1		Recovery flow switch	ID1
ID2			ID2
ID3			ID3
ID4			ID4
ID5			ID5
ID6			ID6
ID7			ID7
ID8			ID8
ID9			ID9
ID10			ID10
ID11			ID11
ID12			ID12
ID13			ID13
ID14			ID14
	Analogue inputs	***Analogue inputs***	
B1		Evap. 1 outlet water temperature	B1
B2		Evap. 2 outlet water temperature	B2
B3		Recovery inlet temperature	B3
B4		Recovery outlet temperature	B4
B5			B5
B6			B6
B7			B7
B8			B8
	Digital outputs	***Digital outputs***	
NO1		V 1-1	NO1
NO2		V 1-2	NO2
NO3		V 1-3	NO3
NO4		V 1-4	NO4
NO5		V 1-5	NO5
NO6			NO6
NO7			NO7
NO8		V 2-1	NO8
NO9		V 2-2	NO9
NO10		V 2-3	NO10
NO11		V 2-4	NO11
NO12		V 2-5	NO12
NO13			NO13
NO14			
NO15		***Analogue outputs***	
NO16			Y1
NO17			Y2
NO18			Y3
NO19			Y4
NO20			
NO21			
NO22			
NO23			
NO24			
NO25			
NO26			
NO27			
NO28			
NO29			
	Analogue outputs		
Y1			
Y2			
Y3			
Y4			

"M" expansion for alternative and screw compressors. Water-cooled polyvalent units and heat pumps with total recovery.

		Expansion "M" - address 2	
	Digital inputs	***Digital inputs***	
ID1		Recovery flow switch	ID1
ID2		Condenser flow switch	ID2
ID3		Condenser pump thermal switch	ID3
ID4			ID4
ID5			ID5
ID6			ID6
ID7	Not used		ID7
ID8			ID8
ID9			ID9
ID10			ID10
ID11			ID11
ID12			ID12
ID13			ID13
ID14			ID14
	Analogue inputs	***Analogue inputs***	
B1		Evap. 1 outlet water temperature	B1
B2		Evap. 2 outlet water temperature	B2
B3		Recovery inlet temperature	B3
B4		Recovery outlet temperature	B4
B5		Condenser inlet temperature (if 2 cond.)	B5
B6		Condenser outlet water temp.	B6
B7		Condenser 2 outlet water temp.	B7
B8			B8
	Digital outputs	***Digital outputs***	
NO1		V 1-1	NO1
NO2		V 1-2	NO2
NO3		V 1-3	NO3
NO4		V 1-4	NO4
NO5		V 1-5	NO5
NO6			NO6
NO7		Condenser pump	NO7
NO8		V 2-1	NO8
NO9		V 2-2	NO9
NO10		V 2-3	NO10
NO11		V 2-4	NO11
NO12		V 2-5	NO12
NO13			NO13
NO14			
NO15		***Analogue outputs***	
NO16			Y1
NO17			Y2
NO18			Y3
NO19			Y4
NO20			
NO21			
NO22			
NO23			
NO24			
NO25			
NO26			
NO27			
NO28			
NO29			
	Analogue outputs		
Y1			
Y2			
Y3			
Y4			

"E" expansion for alternative and screw compressors. Chiller with freecooling.

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
	Digital outputs
NO1	
NO2	
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	
NO19	
NO20	
NO21	
NO22	
NO23	
NO24	
NO25	
NO26	
NO27	
NO28	
NO29	
	Analogue outputs
Y1	
Y2	
Y3	
Y4	

Expansion "E" - address 3

Digital inputs	
Glycol pump thermal switch	ID1
Dual setpoint from external contact	ID2
	ID3
	ID4

Analogue inputs	
Setpoint var. from ext. signal (4-20mA)	B1
Recovery setpoint var. from ext. signal (4-20mA)	B2
Freecooling inlet temperature	B3
	B4

Digital outputs	
Coil charge valve circuit 1	NO1
Coil discharge valve circuit 1	NO2
Coil charge valve circuit 2	NO3
Coil discharge valve circuit 2	NO4

Analogue outputs	
Freecooling modulating valve	Y1

Expansion "E" - address 5

Digital inputs	
Chiller/Heat pump from external contact	ID1
	ID2
Pump 1 thermal switch	ID3
Pump 2 thermal switch	ID4

Analogue inputs	
Evap. outlet water temperature 1	B1
Evap. outlet water temperature 2	B2
External temp. / Cond. 2 outlet water temp.	B3
Optional temp. / Cond. outlet water temp.	B4

Digital outputs	
Rev. cycle valve 1/recovery 1/freecooling OFF	NO1
Rev. cycle valve 2/recovery 2/freecooling ON	NO2
Pump 1	NO3
Pump 2	NO4

Analogue outputs	
	Y1

"E" expansions for semi-hermetic compressors. Condensing unit or for alternative compressors. Unit with four compressors on two circuits.

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
	Digital outputs
NO1	
NO2	
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	
NO19	
NO20	
NO21	
NO22	
NO23	
NO24	
NO25	
NO26	
NO27	
NO28	
NO29	
	Analogue outputs
Y1	
Y2	
Y3	
Y4	

Expansion "E" - address 4

Digital inputs	
Compressor 3 thermal protection	ID1
Compressor 4 thermal protection	ID2
Compressor 3 oil	ID3
Compressor 4 oil	ID4

Analogue inputs	
Step 1	B1
Step 2	B2
Step 3	B3
Step 4	B4

Digital outputs	
Separation stage 1 compressor 3	NO1
Separation stage 2 compressor 3	NO2
Separation stage 1 compressor 4	NO3
Separation stage 2 compressor 4	NO4

Analogue outputs	
	Y1

8.4.3 Units with centrifuge compressors

Expansion "E" Chiller with bypass valves.

	Digital inputs
ID1	
ID2	
ID3	
ID4	
ID5	
ID6	
ID7	
ID8	
ID9	
ID10	
ID11	
ID12	
ID13	
ID14	
ID15	
ID16	
ID17	
ID18	

	Analogue inputs
B1	
B2	
B3	
B4	
B5	
B6	
B7	
B8	
B9	
B10	

	Digital outputs
NO1	
NO2	
NO3	
NO4	
NO5	
NO6	
NO7	
NO8	
NO9	
NO10	
NO11	
NO12	
NO13	
NO14	
NO15	
NO16	
NO17	
NO18	

	Analogue outputs
Y1	
Y2	
Y3	
Y4	
Y5	
Y6	

Expansion "E" - address 1

Digital inputs	
	ID1
	ID2
	ID3
	ID4

Analogue inputs	
	B1
	B2
	B3
	B4

Digital outputs	
Injection 1	NO1
Injection 2	NO2
Injection 3	NO3
Injection 4	NO4

Analogue outputs	
	Y1

9 CONNECTING SEVERAL BOARDS

Caution: , perform the following operations before touching the boards in order to prevent electrostatic discharge:

- wear the bracelet (connected to the earth circuit) and the heel strap
- the board should be closed inside an antistatic bag protecting it from electrostatic discharge: remove it from the bag and place it on the light-blue mat with the yellow edge or on the dark-blue mat.
- You can now work on the board.

Several boards can be connected together.
There are two connection types: "base-expansion" on the expansion serial line and "master-slave" on the "plan" serial line. The "mixed" connection is a combination of the other two.

9.1 "BASE-EXPANSION" Connection

In the "base-expansion" connection, the entire intelligence of the unit resides in the base. The connected expansions are exclusively used as additional I/O. The boards must be connected together with a three-wire shielded cable connected from terminal J23 of the base to terminal J3 of expansion "E" or to terminal J11 of expansion "M" (see figure below).
"W3000 exp" software must be installed in expansion "M" while no software application is required for expansion "E".

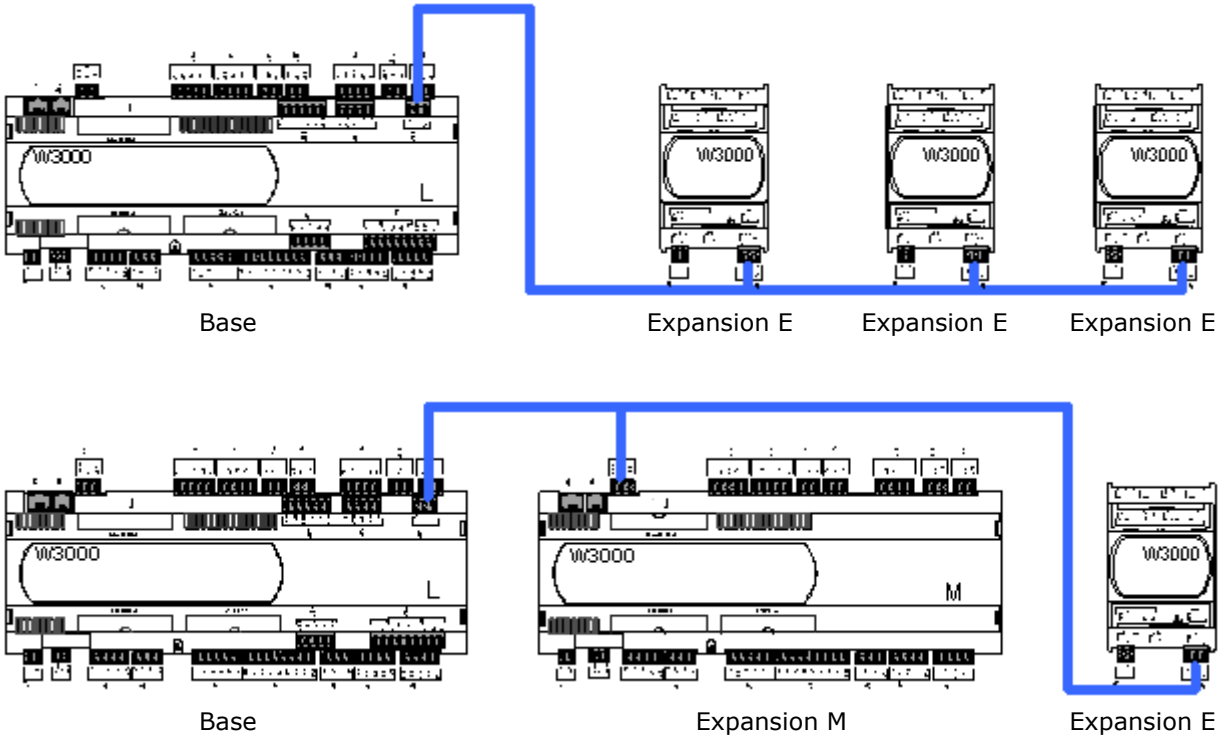


Figure 9.1: *"base-expansion" connection*

A certain number of expansions are present depending on the type of boards and the enabled functions.
A specific address must be given for each expansion.

EXPANSIONS FOR HERMETIC COMPRESSORS

Additional function	Function, chiller type	Expansion address	Expansion type
Recovery enable	Chiller with heat recovery	1	E
Low external air temperature kit	Heat pump for low external air temperatures	1	E
Recovery enable	Multi-purpose Heat pump with total heat recovery	2	M
Freecooling enable Coil fractioning enable Low temperature control enable Low pressure transducer enable	Freecooling chiller Unit with fractioned coil Low temperature chiller Any unit with hermetic compressors where low pressure is required to be monitored (except for All-in one units and Heat pumps with total recovery)	3	E

EXPANSIONS FOR ALTERNATIVE AND SCREW COMPRESSORS

Additional function	Function, chiller type	Expansion address	Expansion type
Recovery enable	Chiller with heat recovery	1	E
Recovery enable	Multi-purpose Heat pump with total heat recovery	2	M
Freecooling enable Coil fractioning enable Setpoint variation enable from external signal Recovery setpoint variation enable from external signal Dual setpoint enable from external contact	Freecooling chiller Unit with fractioned coil Unit with setpoint variation or dual setpoint	3	E
Number of evaporators 0 Number of compressors per circuit 2	Condensing units Unit with 2 alternative compressors per circuit	4	E
At least one pump enable Heat pump External temperature probe enable Optional temperature probe enable Recovery enable Freecooling enable Coil fractioning enable Low temperature control enable 2 evaporators	Chiller with pumps on board Heat pump chiller Unit with external temp. probe Unit with optional temp. probe Chiller with heat recovery Freecooling chiller Unit with fractioned coil Low temperature chiller Chiller with more than one evaporator	5	E

EXPANSIONS FOR CENTRIFUGAL COMPRESSORS

Additional function	Function, chiller type	Expansion address	Expansion type
Bypass valve enable	Bypass valve for starting compressors	1	E

9.2 "MASTER-SLAVE" connection

Intelligence is distributed instead in the "master-slave" connections. Suppose we have a unit with 4 cooling circuits: the master board manages circuits 1 and 2 while the slave board manages circuits 3 and 4. In this case, the additional board is not simply an input/output expansion, but is fully involved managing part of the unit. The board software is the same and identifies its functions depending on the board address: the one with address 1 will be the master and will communicate with the board with address 11 (master address plus 10). Pay special attention to board addresses for this reason.
Connect the boards together with a 3-wire shielded cable connected between terminals J11 of the boards, as shown in the figure below.

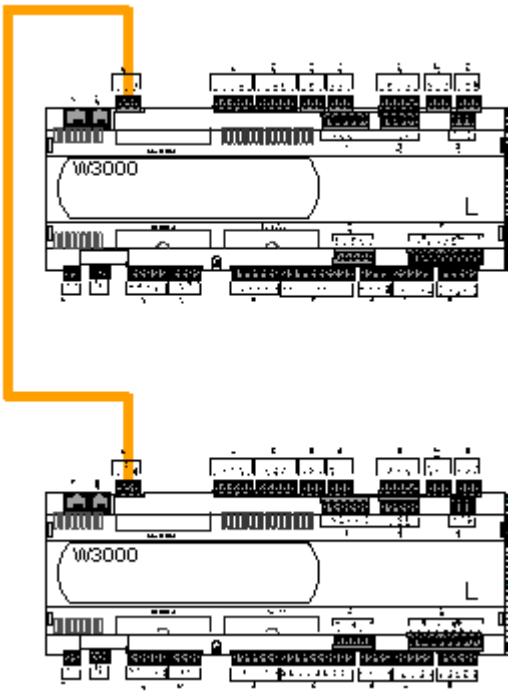


Figure 9.2: *"master-slave" connection*

9.3 "Mixed" connection

The "mixed" connection is used in units with 3/4 cooling circuits where an increase in inputs/outputs is required. The master board manages circuits 1 and 2 while the slave board manages circuits 3 and 4. Additionally, depending on the required functions or the type of machine, boards used as expansions can be connected.
Connect the expansions for the I/O of circuits 1 and 2, and for the unit I/O to the master.
Connect the expansions for the I/O of circuits 3 and 4 to the slave
The following figure shows the connections between the boards and the expansions: a 3-wire shielded cable connects terminals J11 of the master and slave boards (marked in orange), and a 3-wire shielded cable connects terminals J23 of the master and/or slave boards with terminal J3 or J11 of expansions "E" or "M" (marked in blue).

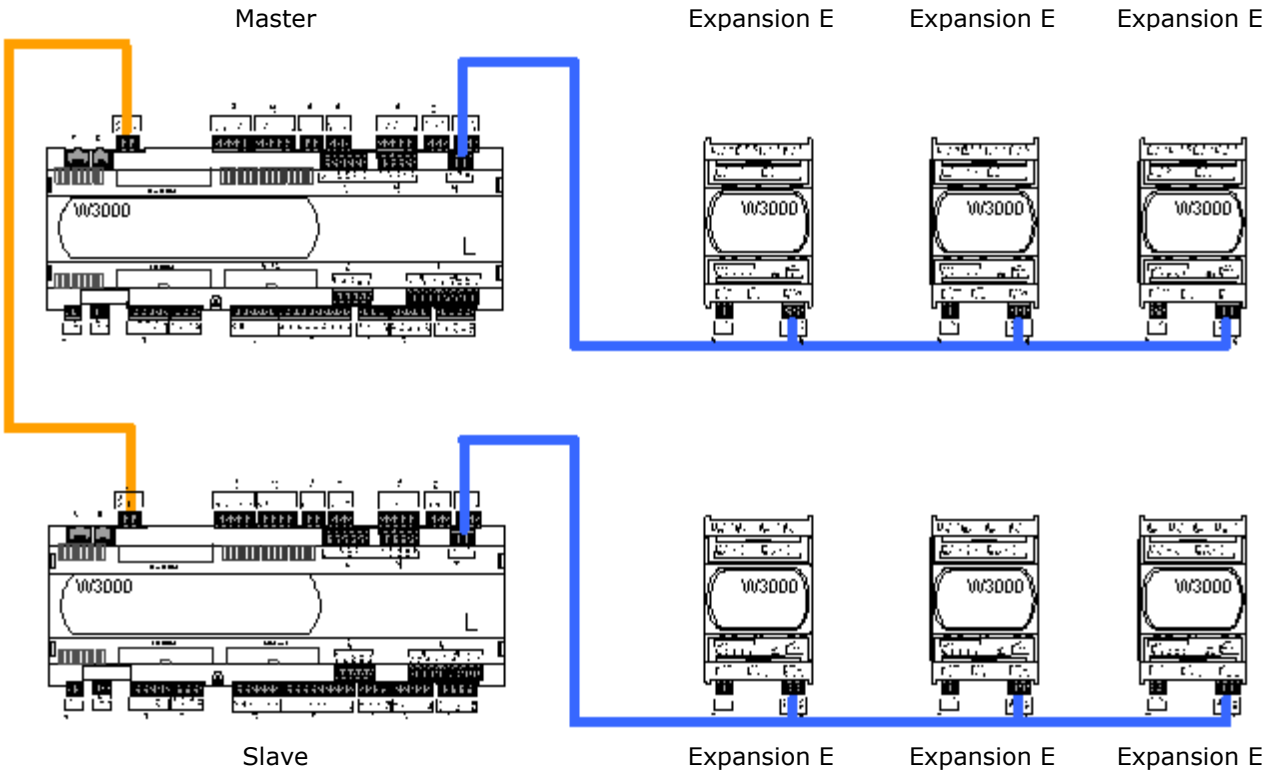


Figure 9.3a: *"mixed" connection*

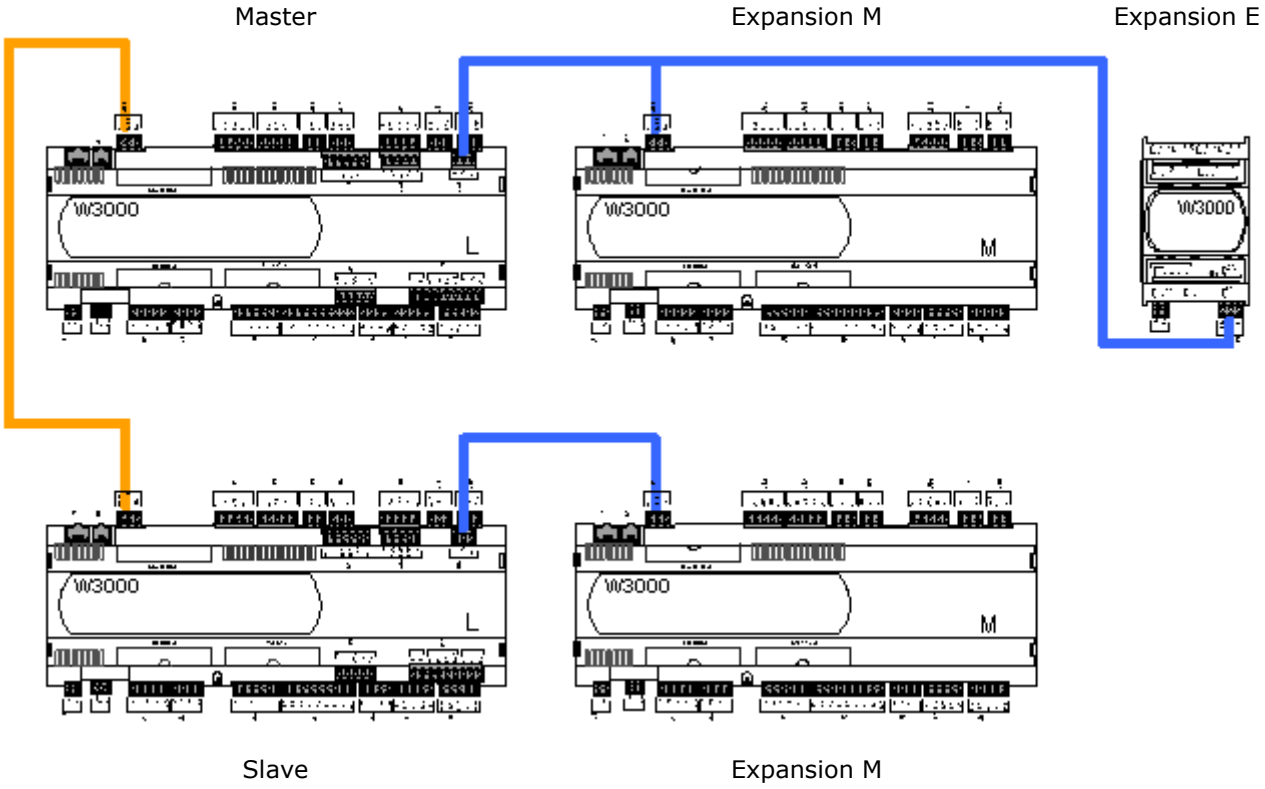


Figure 9.3b: *"mixed" connection*

10 Terminal configuration

The first thing to do when connecting the boards of several units in a network in order to have a remote keypad or replace a board, is to configure the terminals.
This cannot be achieved with the basic W3000 keypad. In this case, configure the terminals using the W3000 or W3000 compact keypad and afterwards reconnect the W3000 basic display.

Before starting, it is advisable to check that each board and each terminal has been identified with the correct address established when the network was designed. It is important to remember that as the set address is only read by the boards during start-up, it is best to perform a global reset of all the devices if a mistake is made when configuring the addresses (more than one board with the same address). Reset the network by disconnecting all the devices from the power supply .

The configuration procedure can be activated from any terminal (keyboard), which may also be connected temporarily only to perform configuration operations and removed upon completion. The operations to perform are described in the following paragraphs.

10.1 Setting the keypad address

After connecting the keypad to the device, perform the following procedure:

1)	Press [UP], [DOWN] and [ENTER] together and hold down until the mask shown to the side appears.	Display address Setting.....:00 I/O Board address:
2)	Press [ENTER] to move the cursor to "Display address setting". Press [UP] and [DOWN] to set the required keypad address (e.g.: 21).	Display address Setting.....:21 I/O Board address:--
3)	This mask means that the address of the keyboard has been set.	Display address changed
4)	If an empty mask or a mask showing "NO LINK" appears after pressing [ESC], it means that the keypad is not communicating with any board. Either the board must be addressed or the plan network must be configured.	NO LINK

N.B.: This is a *timed procedure*; if the parameters are not set within a few seconds, the display turns off. In this case, the operation must be repeated.

10.2 Setting the board address

The board address is set by the software using the keypad.
Proceed as follows:

1	Make sure the keypad address is set to 0 (see keypad address settings para)	Display address Setting.....:00 I/O Board address:
2	Disconnect the board from the power supply (turn off the general switch).	
3	Power the board by pressing [ALARM] and [UP] **together**; hold the keys down until the mask shown to the side appears.	pLan address: 0 UP: increase DOWN: decrease ENTER: save & exit
4	Set the required address (e.g.: 1) To do this, press [UP] or [DOWN]; press [ENTER] to confirm.	pLan address: 1 UP: increase DOWN: decrease ENTER: save & exit
5	An "empty" mask appears because the address of the keyboard is 0 and that of the board is (as shown in the example) 1; the two devices cannot communicate. In any case, board address 1 has been set.	
6	Now perform "PLAN **NETWORK CONFIGURATION**" to allow the board to communicate with its keypad	

10.3 Plan network configuration

10.3.1 Plan network connection (local)

For each unit with an on-board keyboard, perform the following procedure to create a "local" plan network:

0	Make sure the board has been addressed (as described in the previous paragraph).	pLan address: 1 UP: increase DOWN: decrease ENTER: save & exit
1	Press [UP], [DOWN] and [ENTER] together and hold down until the mask shown to the side appears.	Display address Setting.....:00 I/O Board address:
2	Set the required address for the keyboard (e.g.: 21)	Display address Setting.....:21 I/O Board address:--
3	Press [ENTER] to display the address of the boards in pLan (in this case 1). N.B.: If there is more than one board, press [UP] or [DOWN] to choose which board to configure.	Display address Setting.....:21 I/O Board address:01
4	Press [ENTER] to configure the terminals of the selected board; press [ENTER] to confirm	Terminal config Press ENTER To continue
5	In this mask, the [ENTER] key moves the cursor from one field to another and the [UP] or [DOWN] keys change the values. P:01 means that the board with address 1 is being configured.	P:01 Adr Priv/Shared Trm1 None -- Trm2 None -- Trm3 None -- Ok?No
6	Configure keyboard 21 (previously set) as Pr=private (usually the one on the unit). (Sp=printer, or Sh=shared)	P:01 Adr Priv/Shared Trm1 21 Pr Trm2 None -- Trm3 None -- Ok?No
7	The remote keyboard must also be configured. Simply define the keyboard addressed with 32 (even if not present) as Sh.	P:01 Adr Priv/Shared Trm1 21 Pr Trm2 32 Sh Trm3 None -- Ok?No
8	To save the settings and exit the configuration procedure, move the cursor to "No", change it to "Yes" and press [ENTER]. To exit without saving the settings, wait 30 seconds without touching the keyboard.	P:01 Adr Priv/Shared Trm1 21 Pr Trm2 32 Sh Trm3 None -- Ok?Yes
9	The following mask may appear. If no expansions are connected, simply press [ESC] to show the main display menu.	#################### ...expansion link... ####################

To connect several units together and remote control them, thereby forming a plan network (global), a remote keypad controlling all the units is required.
The remote keypad cannot be a W3000 base keypad. If a W3000 basic keypad is installed on the machine, replace it with a 3000 compact.

10.3.2 Configuring the plan network (global)

It is easy to install a PLAN network (global). Just a few but essential operations are required. If just one of these is not performed correctly, the entire system will not work.
The remote keyboard will work problem-free if the following operations are performed one after the other.

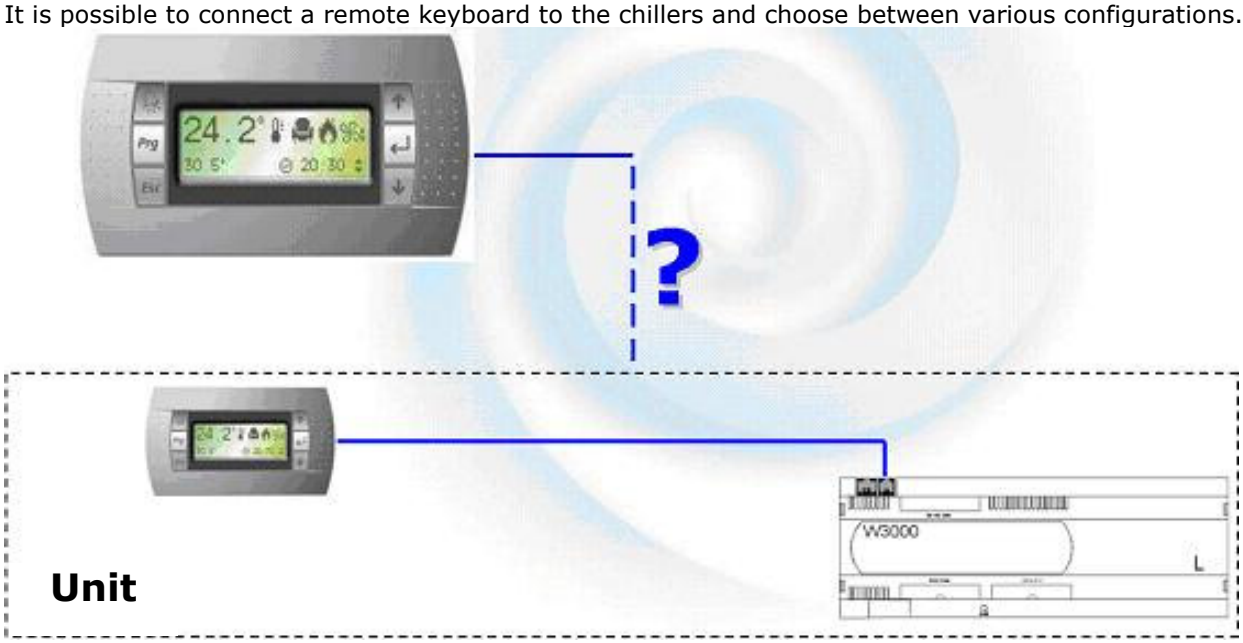
1	Set the on-board machine board and keyboard addresses (see configuring the local plan network)	Configure the addresses of each board and keypad (with a univocal address in the network), leaving the network cable disconnected (connector J11)
2	Check the chillers work correctly without being connected to the network.	
3	Disconnect the power supply from the chillers	
4	Connect all the chillers to the network except for the remote keyboard.	Connect connectors J11 together. Do not connect the remote keyboard. This creates a plan network comprising more than one chiller.
5	Power the chillers.	
6	Check that all the networked devices (boards and keypads) work correctly	If any faults occur, check the configuration of the terminals to make sure that no two devices have the same address.
7	Connect the remote keypad to one of the units	Disconnect the machine keyboard and connect the remote keypad to the J10 connector.
8	Make sure the remote keyboard address is set to 32.	Follow the procedure for addressing the keyboard.
9	Make sure that the devices outside the chillers are correctly configured.	If the power unit for the remote keypad is fitted (see below: remote keypad from 200 up to 500 metres), make sure the remote keypad is powered.
11	Connect the remote keyboard.	Disconnect connector J10 from the last board and connect it to connector "A" of the "T" shunt. Connect connector J10 on the last board to connector "B" of the "T" shunt.
10	Wait a few seconds until network communication has stabilised.	

- In a global network comprising *just W3000 chillers*, the W3000-compact can be used as a remote keyboard. After configuring the various units (each with a different address in order not to generate conflicts in the global network), connect the remote keyboard and repeat the procedure. In this network type, the various machines of the network are switched by pressing [ESC] and [UP] together.
- If the plan network *does not comprise just W3000 chillers*, a 16-key keyboard must be used. Press [UNIT] to switch between one board and another. The terminals, however, must be given a special configuration as the 16-key keyboard is only recognised on "terminal 3".
  Then configure the local plan network. Follow the same procedure up to point 6 and then modify the subsequent points as follows:

7	The remote keyboard can be configured even if the plan network doe not comprise just W3000 chillers. Simply define the keyboard addressed with 32 (N.B.: on terminal 3) as Sh, i.e.: shared.	P:01 Adr Priv/Shared Trm1 21 Pr Trm2 None -- Trm3 32 Sh Ok?No
8	To save the settings and exit the configuration procedure, move the cursor to "No", change it to "Yes" and press [ENTER]. To exit without saving the settings, wait 30 seconds without touching the keyboard.	P:01 Adr Priv/Shared Trm1 21 Pr Trm2 None -- Trm3 32 Sh Ok?Yes

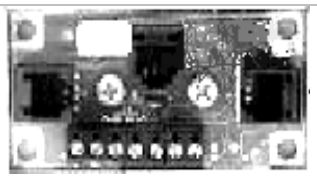
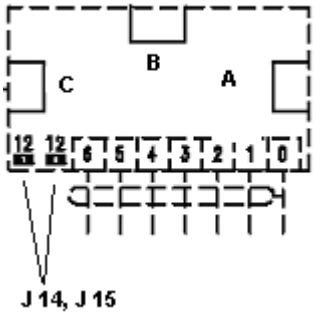
10.4 Connecting the remote keypad

Usually, just the keyboard on the chiller is used. This is connected directly to connector J10.
It is possible to connect a remote keyboard to the chillers and choose between various configurations.



10.4.1 "T" shunt

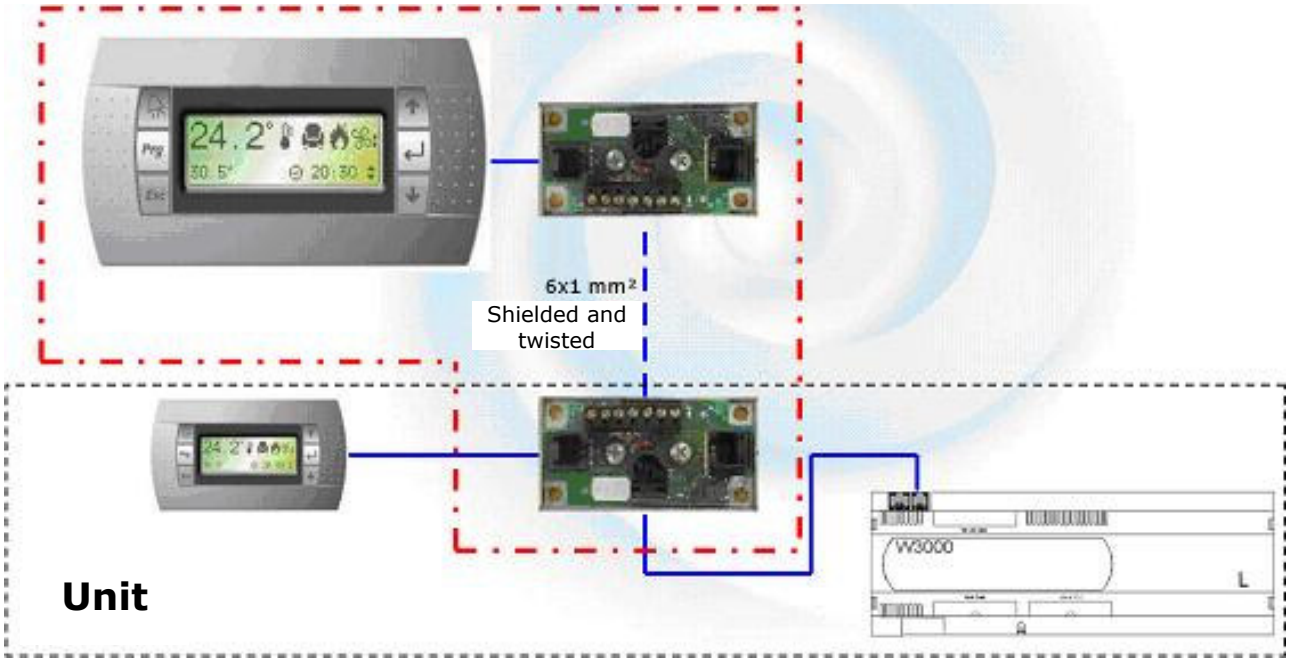
This is a shunt with phone connectors that is used in both the local and global plan network.
The two jumpers J14 and J15 must short circuit pins 1 and 2.
There is also a terminal board. The meanings of the various terminals are explained below.

1.	Imagine of a T shunt.		
2.	Wiring diagram of a T shunt.		
3.	Meaning of the terminal board	Screw terminal	Function
		0	Earth (shielded cable sheath)
		1	+VRL=30V
		2	GND
		3	Rx-/Tx-
		4	Rx+/Tx+
		5	GND
		6	+VRL=30V

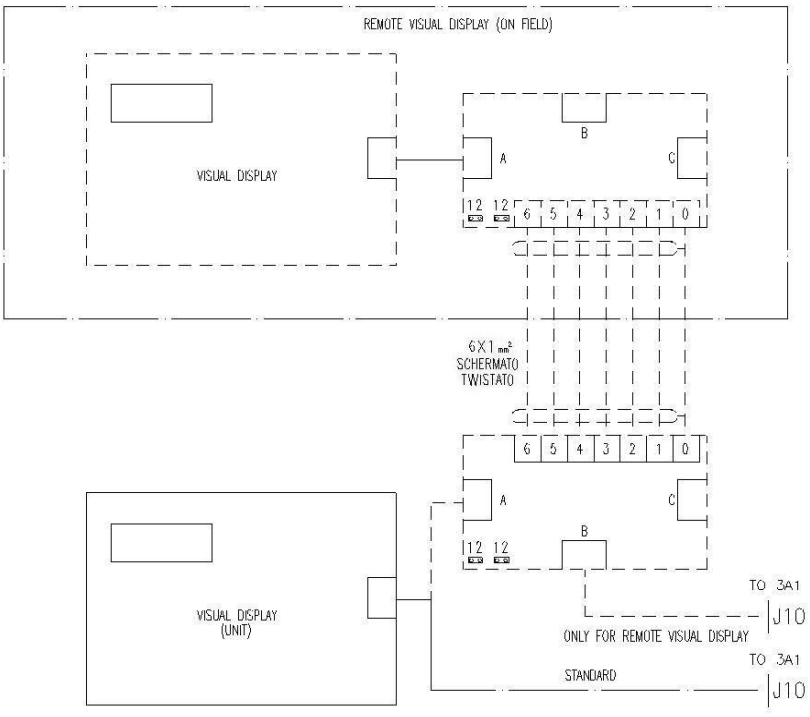
10.4.2 Remote keyboard up to 200 metres

To connect a remote keyboard two "T" shunt boards must be used, one near the controller and one near the remote keyboard.

If a remote keyboard monitors just one unit, the correct configuration is:



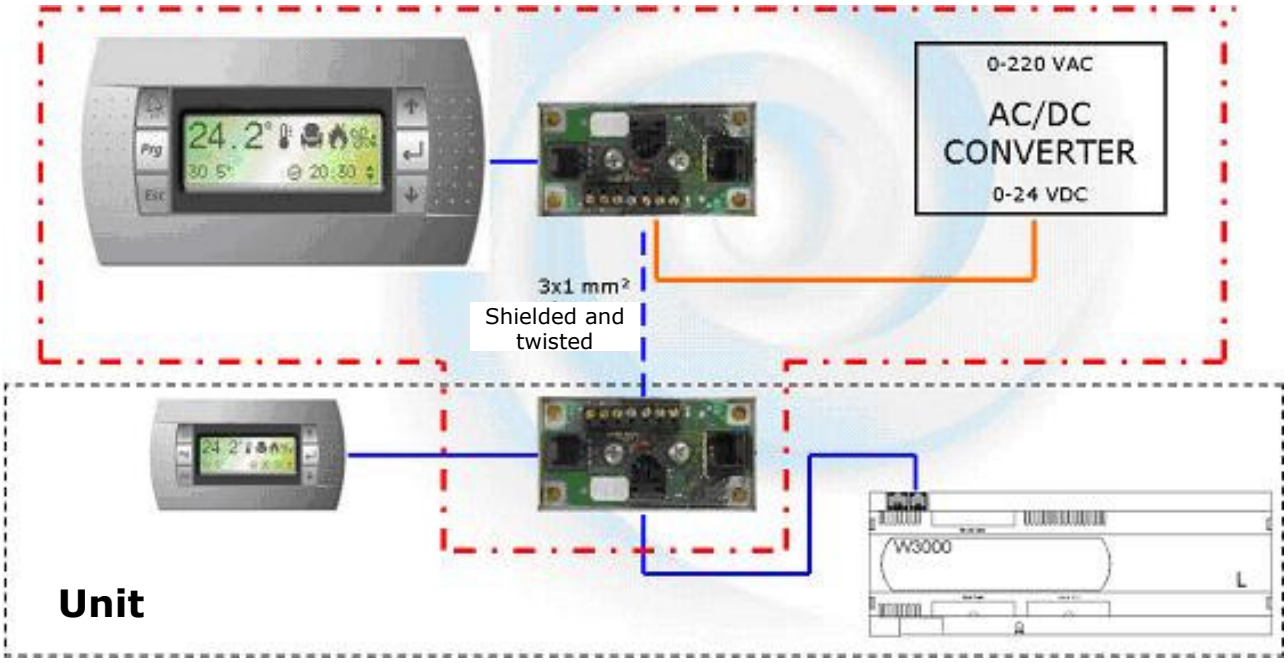
The wiring diagram is shown below.



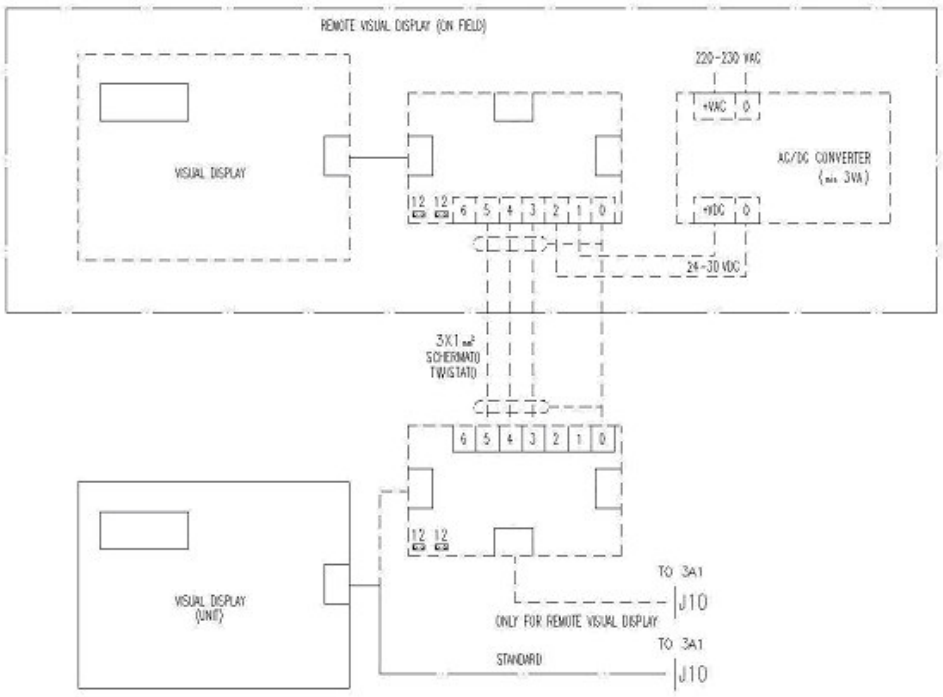
10.4.3 Remote keyboard from 200 metres up to 500 metres

If the remote keyboard must be installed over 200m away from the plan network, a power unit must be installed near the remote keyboard.
The remote keyboard cannot be installed more than 500 m away.
The only difference between this and a remote keyboard up to 200 metres is that the power unit must be to terminals 1 and 2 of the T shunt (the one near the remote keyboard)

If just one chiller is connected, the connection diagram is:

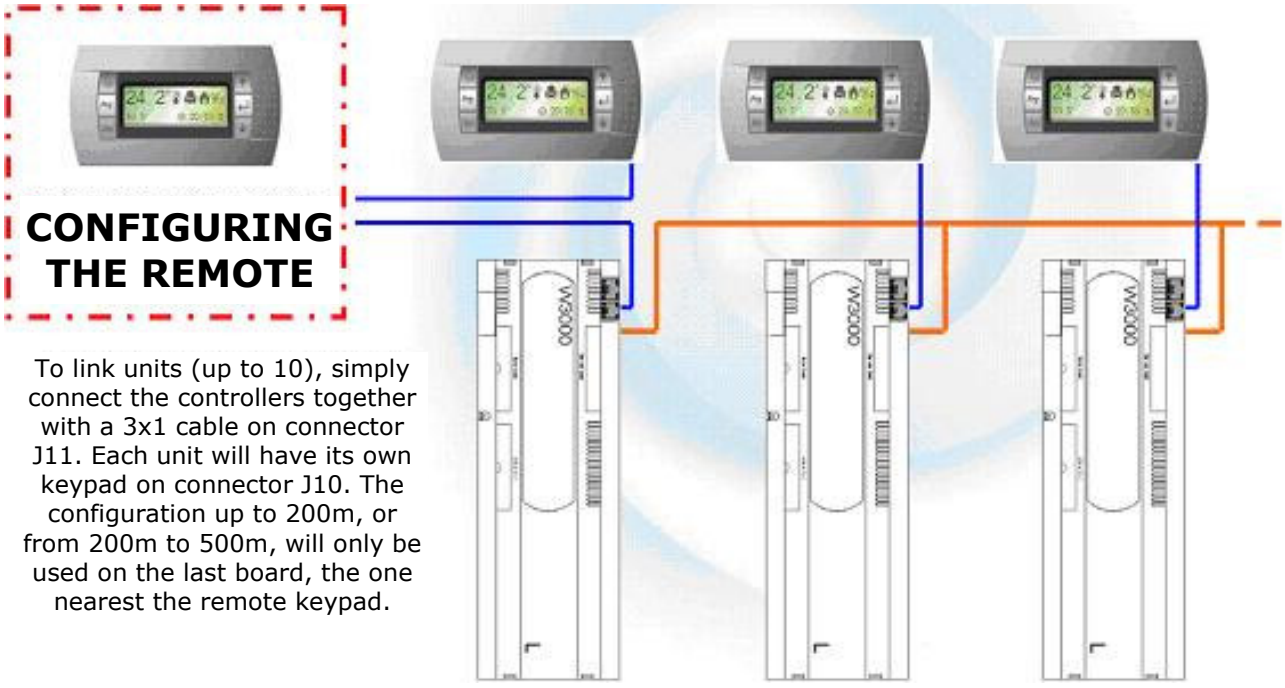


The wiring diagram is shown below.



10.4.4 Remote keypad for more than one unit

To connect more than one chiller to the same remote keyboard, connect the two boards together by jumpering connectors J11.
A configuration similar to the two shown above should only be used on the last board in the network (the one nearest the remote keyboard).



To link units (up to 10), simply connect the controllers together with a 3x1 cable on connector J11. Each unit will have its own keypad on connector J10. The configuration up to 200m, or from 200m to 500m, will only be used on the last board, the one nearest the remote keypad.

SYMBOLS
The following symbols are used in the W3000 and W3000 compact masks.

Flashing items on main mask	Description
Bands	Time bands active
Fcool	Unit in free-cooling mode
Limit	Power limit active (demand limit)
Freeze	Outlet temperature approaching anti-freeze setpoint

	Unit menu symbol	Description
	Off	Unit/circuit off
	Ch nr	Chiller circuit not demanded by thermoregulator
	Ch	Chiller circuit demanded by thermoregulator
	Ch+R	Chiller circuit plus recovery demanded by thermoregulator
	Hp nr	Heat pump circuit not demanded by thermoregulator
	Hp	Heat pump circuit demanded by thermoregulator
	R nr	Recovery only circuit not demanded by thermoregulator
	R	Recovery only circuit demanded by thermoregulator
	Pd	Circuit in pump-down mode
	Defr	Circuit in defrost mode
	Drip	Circuit in drip mode

	Chiller symbol	Description
	chiller	Chiller

	Chiller+freecooling symbol	Description
	chiller	Chiller
	chiller+fc	Chiller plus freecooling

	Chiller+recovery symbol	Description
	chiller	Chiller
	chiller+rec	Chiller plus recovery

	Heat pump symbol	Description
	chiller	Chiller
	heat pump	Heat pump

	All-in-one symbol	Description
	auto	Automatic
	recovery	Recovery
	chiller+rec	Chiller plus recovery
	chiller	Chiller

	Heat pump with recovery symbol	Description
	summer auto	Summer automatic
	summer rec	Summer recovery
	summer ch+rec	Summer chiller plus recovery
	summer ch	Summer chiller
	winter hp	Winter heat pump
	winter rec	Winter recovery
	winter auto	Winter automatic